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VOL. LXXXII No. 2120

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LONDON, JANUARY 2, 1960

PRICE ONE SHILLING

Carols in the Great Hall

ONCE a year the Great Hall of Euston Station is the scene of a carol service at which a choir of London Midland Region staff sings on the steps of the great staircase. On Wednesday of last week the tradition was again observed, the service, and indeed each of 13 carols, being introduced by the Rev. John Borrill, vicar of St. Pancras, whose parish church, built just before the railway era, has served so many railway occasions from London and North Western days onwards. A gesture from the conductor, Mr. George Kirby, and the Great Hall echoes, cathedral like, to *O Come, all ye Faithful*. At the end of an hour of song by choir and passengers a substantial sum has been raised for toys for London children's hospitals. The room, unique in a British railway station, was conceived by Robert Stephenson; the architect was Philip Hardwick, designer of the famous Doric portico, alas obscured for many years from view from Euston Road by the extension of the hotel. The Great Hall is 137 ft. long, 62 ft. wide and 62 ft. high. Its flat panelled ceiling is said to be the largest of its kind in the world; it is copied from St. Paul's-outside-the-walls, Rome. Groups of figures in each corner are symbolic of Liverpool and Manchester, London and Birmingham, Lancaster and Carlisle, and Northampton and Chester. Bailey's statue of George Stephenson (to which 3,000 working men are said to have contributed an average of two shillings each, apart from donations from members of the Institution of Mechanical Engineers) occupies a commanding site in the hall. Happily, under British Railways auspices the room has been restored to a noble aspect and the clutter of booths which marred its dignity during the L.M.S. regime has been swept away.

Victoria Line Advocated

SOMEWHAT belatedly, the report recommending immediate construction of the Victoria Line, dispatched to the then Minister of Transport by Mr. Alexander Samuels, chairman of the London Travel Committee, last July, has been printed and issued by H.M. Stationery Office. The main conclusions are set out elsewhere in this issue. At half a crown the booklet is worth the attention of any student of urban transport problems. A new rapid transit railway, 11½ miles long, from Victoria to Walthamstow Wood Street, would have 13 stations, at 11 of which connection is made with other railways. Apart from providing an invaluable faster direct route from Victoria to the West End and three of the principal northern main-line termini—Euston, St. Pancras and Kings Cross—it would provide a new way into town from north-eastern suburban areas and would relieve congestion on parts of the District, Central and Piccadilly Lines of London Transport in handsome style. It would reduce street traffic indirectly by providing public transport where private cars show to advantage and directly by reducing demand for bus travel in Seven Sisters Road and between Green Park and Victoria, to name but two sections. But at a capital cost of £55 million and with the foreknowledge that many passengers would merely be diverted from other facilities, it is estimated that the annual loss would be about £219,000 on operating and the remainder of the loss of some £2.5 to £3 million would arise from capital charges. Ways of reducing the loss are investigated and rejected (some, such as charging higher fares on this line, appear outside the range of practical politics) and the conclusion is reached that this is an urgently needed improvement to the traffic facilities of the Metropolitan area and that despite the difficulties it should be put in hand as early as possible.

Boat Show at Earls Court

SPONSORED by the *Daily Express* and organised by the Ship and Boat Builders' National Federation, the sixth National Boat Show has been moved to Earls Court, where it occupies a quarter of a million square feet. The show opened on Wednesday and remains open until January 9. Another

advantage of the move to Earls Court is that use has been made of the pool there to show many of the exhibits in their natural element. The pool has been dressed up as a picturesque English fishing village, featuring its own harbour and surrounding shops. Although preponderantly of general public interest, catering for the ever-widening enthusiasm for the use of our sea coast and waterways for pleasure purposes, there is also much that is new and of importance to those who get their living in maritime pursuits. For example, there is a remarkable exhibition of marine optics, in which the mechanism of modern lighthouses is a feature, and one of the biggest displays of fishing tackle ever assembled under one roof can be seen. There are demonstrations of life rafts on the pool and a

Southend a road on reclaimed land in the Thames Estuary between Leigh-on-Sea and Chalkwell as well as a better connection from Eastern Avenue to Thorpe Hall Avenue.

Accident through Broken Rail

AN accident which might have had more serious consequences but for the robustness of the Buckeye coupling and the alertness and prompt action of signalmen occurred at Slough (Western Region) at 7.25 p.m. on May 1 last. The crowded 1.5 p.m. express passenger from Pembroke Dock to Paddington was approaching the station under clear signals at about 70 m.p.h. when it was derailed by a broken rail. The last six coaches of the nine-coach train were

flat-bottomed rail, which has a much flatter radius. Progressive replacement of bull-headed track continues; the number of these failures should therefore decline, although most rail breakages are due to other causes, such as cracks through fishbolt holes. In the Western Region reliance is placed primarily on the ganger for the detection of cracked rails, a method which has proved satisfactory in the past; indeed, Brigadier Langley "can find no record of a broken rail having previously caused a derailment in the Western Region or before that on the Great Western Railway." He states that most rail cracks occur at or near the joints and usually take a long time to develop; annual inspections should, therefore, ensure that they are detected before they become dangerous. Comprehensive instructions on the subject, which had already been issued by the Western Region, are being amplified and made clearer. The Buckeye coupling, which proved so valuable in this accident, is now standard on all main-line corridor stock. The report concludes by drawing attention to "the rapidity with which the signalmen relayed the warning messages so that a train travelling at speed on the down main line was stopped before it reached the scene of the derailment." This reflected "much credit on these men who acted in this emergency in a way which one has come to expect from responsible railwaymen."

North Eastern Main-Line Diesels

FURTHER progress of modernisation in the North Eastern Region of British Railways is evident with the delivery of 13 Type 4 2,000-h.p. diesel-electric main-line locomotives, numbered D237 to 249 inclusive; first phase of the region's planned changeover from steam to diesel traction on main-line trains will soon begin. By the spring the new diesel locomotives will be regularly hauling many express passenger and freight trains on the Newcastle-Edinburgh and Newcastle-York-Leeds routes. In the meantime, to give drivers and maintenance staff experience of the new locomotives before they are put into regular service they are being usefully employed working selected express passenger, freight and parcels trains over the routes they will work ultimately, and also on the line from Newcastle to Carlisle. The engines are based on Gateshead for maintenance.

Phone Calls on Trains?

THE late Lord Stamp was wont to point out feelingly that one of the blessings of travelling by train was the immunity it gave the harassed business man from occupational worry. Small wonder, therefore, that when replying to a question in the House of Commons recently the Postmaster-General was able to say that, though technically feasible, there was not enough evidence of public demand to justify expenditure on the provision of public radio-telephones on railway trains. We have had excellent experience of conversation between a French train and our home in the South of England and French equipment is now standard on Paris-Lille expresses. Nevertheless, if money is to be spent, there seems greater advantage in using radio "inter-coms" on long-distance trains. Such installations would promote the atmosphere of service so popular in air travel. They would enable the guard or an attendant—perhaps even a train hostess—to keep passengers posted on the progress of the train and to give such service information as relates to impending intermediate stops and connections and the causes of late running; they would, in fact, emulate the very important provider-user relationship common to both air and road travel. There is indeed ample scope for improving and emphasising the amenities of the long-distance train. Apart from the isolation which promotes rest for the nerves and an inclination to absorb the beauties and incidents of the passing scene, which may indeed induce restful slumber, there is also the opportunity to enjoy an unhurried and well-cooked meal amid pleasant surroundings. But much of this calm and contentment would be ruined by anticipation of importunate phone calls.

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rope museum traces the history of rope from ancient Egyptian times to modern Terylene lines used in the Transantarctic Expedition. Among the working craft exhibited are the prototype Hovercraft, an all-welded 42 ft. 6 in. steel tug and a lightweight 36 ft. 9 in. resin-glass lifeboat developed for the new Orient liner *Oriana*. An aircraft manufacturer introduces the light-alloy stretch-forming technique to boatbuilding, while new machinery on display includes a new British-built 50-h.p. gas turbine of American design, a number of new marine diesel engines and a new waterjet propulsion unit which not only offers manoeuvrability and efficient operation in very shallow water but has the virtue of being safer for swimmers, who are vulnerable to mutilation from propeller-driven craft.

New Ways in Towns

ATTENTION of the Roads Campaign Council is not devoted solely to the pressing problems of the Metropolis. In its booklet *New Ways*, newly published, the council advocates the permanent approach to congestion difficulties, that of adding to the capacity of the existing streets by new road construction and modernisation. Selecting three famous county boroughs—two of them primarily seaside holiday resorts and the other an industrial centre—*New Ways* analyses the complex demands of their traffic and the plans that have been made to meet them. It shows, too, how many of these plans are held up, and have been for years, for the want of Government authorisation, and the financial go-ahead, to put them into effect. *New Ways—Blackpool, Doncaster and Southend-on-Sea* is the fourth in the series, earlier issues having dealt with Burnley, Middlesbrough and Reading; Leicester, Newcastle upon Tyne and Worcester; and Chester, Halifax and Leeds. Ideas now put forward include, among many others, an elevated road in the Blackpool Central Station area; north-east to south-west and other facilities across Doncaster; and in

derailed some 300 yards further on and one turned over on its side. The coupling parted between the third and fourth coaches and the front portion ran forward for another half-mile until stopped by the automatically applied vacuum brake. Only four passengers and two railwaymen were taken to hospital with minor injuries, and 25 passengers and three railway staff suffered slight cuts or shock. The permanent way was very seriously damaged; three lines were blocked and it was two days before normal working could be resumed. In his report, Brigadier C. A. Langley, Chief Inspecting Officer of Railways, states that there was no metallurgical or mechanical defect in the rail to account for the failure, which was initiated by a corrosion-fatigue crack. The short length of track affected was near the end of its effective life in a heavily used main line carrying 100 trains a day, mostly at high speed. The section was due to be relaid in the early autumn and this has now been done. "Although one cannot be positive about the time taken for the failure to develop," the report says, "the longitudinal crack under the head must have been visible before the rail joint was oiled by Ganger B. Jones on April 5, less than four weeks before the accident." Evidence that he removed the fishplates and examined the rails for cracks is accepted, "but he could not have used his mirror correctly to inspect the upper fillet alongside the chair; had he done so he could not have failed to have seen the crack." Sufficient care was therefore not exercised.

Reliance on the Ganger

POINTING out that during the four-year period 1955-58 only 23 rails had been broken on British Railways on account of cracks originating along the upper fillet radius between the head and the web of the rail, the Chief Inspecting Officer states that the type of failure which initiated this derailment has been confined almost entirely to the older sections of rail with sharp fillet radii; during the last four years only one cracked rail has been found in the standard 109 lb.

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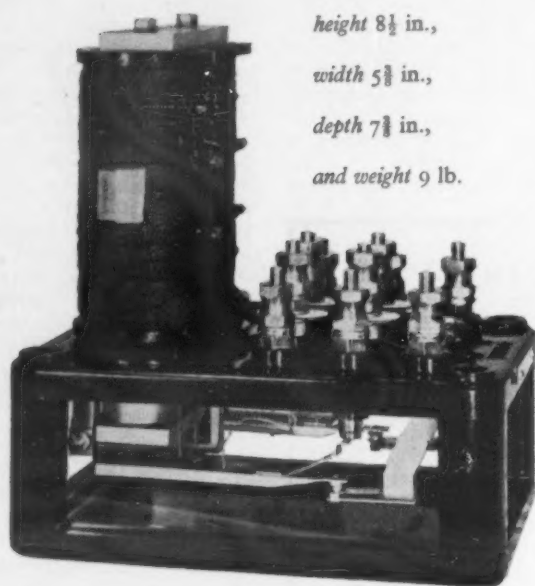


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Published Every Friday

RUSSELL COURT, 3-16 WOBURN PLACE,
LONDON, W.C.1

Telephone Number: TERNONE 0303 (3 lines)
Telegraphic Address: Transpubco, Westcent, London

ANNUAL SUBSCRIPTIONS

BRITISH ISLES, 47/6; CANADA, 45/-;
ELSEWHERE ABROAD, 47/6

payable in advance and postage free

The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements.

The Road Programme

MASSIVE expansion of the road programme took place during the year 1958-59. Figures issued in *Roads in England and Wales—Report for the Year 1958-59* show that in the year ended March 31, 1959, payments for major improvements and new construction rose to £44,024,000, as against £23,416,000 in 1957-58. Commitments are, of course, bound to fluctuate according to the authorisation of major schemes—thus in the year covered by the report the value of new work authorised on trunk and special roads dropped to £34,310,380 (exclusive of land) compared with £46,772,846, but that was because the previous year's figure included the London-Birmingham motorway. Grants for classified road schemes rose from £15,085,000 in the previous year to £28,892,000, partly due to the inclusion of two very large schemes, totalling £9.5 million in grant value, for Park Lane and the duplication of Blackwall Tunnel. Progress during the period under review centred on the basic plan for the development of a high-speed road network.

In Progress

WORK in hand is of impressive proportions. On A1 (London—Edinburgh—Thurso) dual carriageways are to be provided as far north as Newcastle upon Tyne; of the 270 miles 20 were so equipped before 1958-59; a further 24 had been completed in the year and 57 miles authorised, including 16 schemes valued at over £12 million, of which the Doncaster bypass, to be built to motorway standards, is one. In Kent the Medway towns bypass, designed to improve access by A2 to the Channel ports, will be a motorway from west of Strood to east of Faversham. The 5½-mile Maidstone bypass, which will overcome a frustrating weekend bottleneck on the Folkestone road (A20), is also to be to motorway standards. These schemes should work together greatly to improve the regularity of Maidstone and District bus services. Apart from the opening of the so-called London and Birmingham motorway, which has taken place since the period of the report, a good deal of preparation has gone on for further motorway schemes, such as the Birmingham—Preston motorway from Dunston, north of Birmingham, northward for 77 miles to join the Preston bypass and bypassing Stafford, Warrington and Wigan. It involves five major waterway bridges, over the Trent and Mersey Canal, the Manchester Ship Canal, the River Mersey and the Leeds and Liverpool Canal. Large urban relief schemes valued at more than £250,000 in hand or scheduled for authorisation in the next four years total a sum in excess of £80 million. They include

Cromwell Road, Notting Hill Gate and Elephant and Castle schemes in London, the Dartford—Purfleet Tunnel, the Stretford—Eccles bypass, the Runcorn—Widnes bridge, the Birmingham Inner Ring road, and the Swansea East Side Approach. Forward planning looking to the needs of 1980, went on in the West Midlands and West Riding conurbations and preliminary traffic and technical studies in South-East Lancashire.

Systematic Study

ON the 164,318 miles of roads in England and Wales (of which 86,787 miles are unclassified) the cost of maintenance and minor improvements for the year was just over £70 million, of which trunk and classified roads absorbed £47 million. Some £2½ million was spent on schemes of low priority to assist local employment in selected areas. Safety measures included extension of double white lines, omission of the red-amber phase in traffic lights at Leicester, to see whether the tendency to anticipate the green light can be checked, and the campaigns to engender safe cycling and motor cycling. Traffic in August, 1958, seems to be 14 per cent up on that shown in the census of the corresponding week of the preceding year, and 40 per cent above 1954. Bus and coach mileage declined by 5 per cent and that of goods vehicles was up by 16 per cent, but private cars raced ahead with a 57 per cent increase. The Minister, says the report, keeps traffic trends under constant review and the basis for estimating future traffic growth is under study, as are future standards of construction. Priority in road construction is given to schemes which will most benefit traffic, in particular industrial traffic. Much information, which is of great value in determining the forward programme, has been collected in connection with the trunk road master plan and the modernisation of the roads is progressing systematically. No fewer than 98 trunk road schemes are detailed in the report, with some 134 classified roads schemes in the engineering divisions. Much more must be done, but it may be doubted if demand can ever be overtaken.

The Future

IT is not inappropriate to refer to certain issues brought up by Mr. L. J. Dunnett in his Spurrier Memorial Lecture before members of the Institute of Transport in respect of the future. Foremost among these was the increasing role of private transport. This constitutes a major problem to be faced by the bus and coach industry; indeed, one could pitch it higher and describe it as a potential threat to the basic public transport system. This may change the nature of plans for road schemes as the century progresses. Although the existing road programme is designed to free the flow of industrial traffic, future plans will have to be based increasingly on the needs of traffic as a whole. Of the total traffic, private vehicles are by far the faster growing element, since there is a theoretical limit to the likely increase of goods vehicles, and in the U.S.A. the Utopian ideal of one car one family may by no means be the end. This seems to point to a swing away from highway schemes purely of benefit to commercial traffic movement towards relief of bottlenecks at points where the paths of clamorous motorists cross at summer weekends. As indicated in our remark upon Kentish schemes, such works might have the side effect of restoring local bus services to schedule. Mr. Dunnett, however, elaborated the theme of the necessity of coming to terms with private transport, a balance between the public and private elements being essential to any reasonable solution of the social problem. In solving congestion problems we must avoid devastating our cities. In fact, provision of roads to facilitate movement of private cars has been known to fail to cure congestion but has simultaneously gone far towards destroying the pleasures of urban life. Preservation both of our cities and of adequate facilities for movement of people, goods and vehicles is more than an engineering exercise; it calls for a combined operation of planners, architects and engineers in basic town planning.

NEWS SUMMARY

THE Portuguese railway centenary was marked by a restatement of the modernisation proposals of the present Companhia dos Caminhos de Ferro Portugueses (or C.F.P.), which has been since 1947 responsible for the national railway system except for the Estoril line. The Royal Portuguese Railway was formed on December 19, 1859, and was taken over by the C.F.P. in 1910.

Last journeys by the 106-seat electric cars of the Swansea and Mumbles Railway, oldest passenger-carrying railway in the world, before substitution by buses of the South Wales Transport Co., Limited, will be operated after the morning peak on Tuesday, January 5.

In his statement to shareholders of Dennis Bros., Limited, Mr. David J. Grimes, the chairman, referred appreciatively to the staff and announced a new non-contributory pension scheme initiated on October 1 last. Much of the work on this was done by the company's secretary, Mr. G. F. Eustace, who was made a

director on July 1. Shortage of certain materials and of labour had made deliveries difficult, but the order book was improved and there was every hope of benefit from the removal of purchase tax and of the threat of renationalisation, as well as from a drive for exports.

The Lisbon Metro (described in our December 19 issue) was opened on December 28 by the President of Portugal, Admiral Americo Tomas.

One flight a week of the Britannia-operated London—Caracas service of B.O.A.C. will be extended to Bogota on January 7.

The British Road Services 30 m.p.h. rescheduling agreement originally approved in June, 1957, will come into effect on January 4. (See page 4.)

Modification of the internal layout of the South-East Terminal Building at London Airport is likely to follow prolonged representations by British European Airways on behalf of itself and other operators. It would involve reducing the space at present occupied by Customs and eliminating the offices between the Customs facilities and the passenger lounges.

GREAT CENTRAL MAIN LINE

Analysis of its Value

CHANGING ROLE UNDER MODERNISATION

CONSIDERABLE public interest, not to say antagonism, has been aroused in the East Midlands by the London Midland Region's proposals for the future of the former Great Central main line between the Midlands and Marylebone. Criticism has centred on the intention to withdraw the medium-paced but on the whole reliable main-line passenger service, admittedly not well patronised, in favour of the potentially much faster but in practice less reliable alternative service by the former Midland route. Both speed and reliability will improve greatly on the latter as the impact of modernisation makes itself more fully felt; but in the meanwhile it may perhaps be useful to set out considerations which have affected the decision to go forward with the G.C. line proposals. Some of these considerations stem right back from the original resolution to construct the line, while others result solely from modern conditions.

Historical Background

It was not until towards the end of the 19th century that the directors of the Manchester, Sheffield and Lincolnshire Railway decided to extend the main line from Sheffield to London.

It thus became the last major railway link with London to be constructed; several other lines were already firmly established in the Midlands—London business, and had been for a generation or more. It was a bold scheme, but it must have seemed the one step necessary to put the M.S. and L.—later the Great Central—among the leaders of the pregrouping companies.

What it did in effect was to provide a third direct route to London from Manchester, the West Riding, Sheffield and Nottingham, and a second from Leicester and Rugby. It must be assumed that the traffic on the other lines justified the G.C. in its decision, but it had a number of drawbacks, the effect of which in some cases was not to emerge until later. In the first place the link with the Metropolitan Railway at Quainton Road north of Aylesbury forced the line to cover many miles of sparsely populated country in Northamptonshire and Buckinghamshire, and apart from Rugby it touched no important town south of Leicester. Secondly it required the use of the Metropolitan's heavily graded route between Aylesbury and London which was already carrying a considerable suburban and outer-suburban traffic and which suffers some severe speed restrictions, notably at Aylesbury and Rickmansworth.

High Standards

But the drawbacks were met and overcome for the time being, and the G.C. offered timings and a standard of service which must have caused some concern to the rival lines, especially between South Yorkshire and the Midlands and London. The G.C. London line had not entirely established itself before the 1914-18 war; that was followed very soon by the grouping under the Railways Act of 1921. No doubt the G.C.'s original and extensive interests in South Yorkshire and North Lincolnshire influenced its inclusion in the new L.N.E.R. But the geographical position of its main London line made it a hybrid in the new grouping.

After crossing the two main Midland lines at

The third link, and for the L.N.E.R. probably the most important, was the line between Woodford and Hinton (now Woodford Halse) and Banbury. By means of this line trains could be run direct between the L.N.E.R. and Great Western systems, cutting right across the territory of their great rival the L.M.S. without the need to utilise L.M.S. metals at any point.

Before the 1914-18 war various through services from South Wales to Newcastle upon Tyne were operated via Cheltenham, Banbury, Woodford and Leicester. It was by the Banbury-Woodford route that the now legendary express ran for many years between Aberdeen and Penzance. Although the numbers of through passengers over such a distance (almost 800 miles) can seldom have risen above the negligible, its prestige value even survived its withdrawal, and its successors, providing through services between York and Oxford, Reading, Southampton, Bournemouth and Swindon via Sheffield, Nottingham and Leicester, are still very popular cross-country trains in the summer, especially for travellers from the Midlands.

Today's Problem

The unification of British Railways under the Transport Act of 1947 put a different complexion on the entire situation of the G.C. main line and its connections. Where once it had been the means of stimulating rivalry between three of the four

main railway companies, it now appeared as a line that simply duplicated in most cases facilities which were, or could be, provided as well or better by other routes. So long as the demand for passenger transport by rail remained at the level of the immediate postwar period the duplicate route continued to be valuable. But as the rise of the private car and other means of personal transport made steadily greater inroads

into the railway passenger traffic over short and medium distances, the need for an alternative main route on this scale could fairly be called in question.

The decline in local passenger carryings and the statutory requirement laid on the British Transport Commission to make the railway services pay have led to a general policy of streamlining the railway system, and to the closing of a number of branch lines and stations and even some secondary through routes. But the situation on the G.C., quite apart from being on a considerably larger scale than any other possible closure to be contemplated, falls in almost every respect quite outside the normal pattern of an uneconomic line. While, for example, some of its passenger services are hopelessly uneconomic, others are well patronised; and though some stretches of the line are virtually redundant others again are of great potential value in the railway system of the future. It is, therefore, a case for compromise.

Proposed Solution

High utilisation of track, frequency of trains, and thus good passenger (and freight) service depend ultimately, as has been said in the modernisation plan, on reducing the speed gap between the slowest and the fastest trains. When modernisation schemes are completed, although trains will be running faster, there will still be a gap of 30 m.p.h. or more between the average speeds of the fastest passenger expresses and the normal mineral trains, even when they are fitted with vacuum brakes throughout. Running on the same pair of tracks the two types of train will



In early L.N.E.R. days: Norwegian Boat Special operated from Marylebone to Immingham Docks via Ruislip and the G.W. and G.C. Joint Line; a Robinson 4-6-0 (L.N.E.R. No. 5459) is at the head

Nottingham and Loughborough and the main L.N.W.R. line at Rugby the line took a wide sweep southwards almost into the territory of the Great Western Railway before turning south-eastwards to London. To the L.N.E.R. it represented a drain on the traffic of its main north-south line through Grantham and Peterborough, by which the Great Northern Railway had been at great pains to provide connections and fast through services from Sheffield and Nottingham. The only important new centre to be tapped, as far as the L.N.E.R. was concerned, was Leicester.

Cross-Country Connections

The L.N.E.R. nevertheless made good use of some important advantages which the G.C. main line offered, as well as keeping the London service up to a standard similar to what had previously been maintained. Working arrangements with the Great Western and developments under joint ownership had enabled the G.C. to create no fewer than three short links with the Great Western's main Paddington-Birmingham line. Two of these—between Neasden and Northolt in the suburbs of London and between Haddenham and Grendon Underwood in Buckinghamshire—had made it possible early this century for the G.C. to run some expresses into and out of London via High Wycombe at times when the direct route via Harrow and Aylesbury was fully occupied with the dense residential traffic of the Metropolitan, operated from 1920 by electrification to Rickmansworth.

continue to interfere with each other's running to some extent and to reduce line utilisation. The existence of two more or less parallel main routes (Midland and G.C.) over such a distance (about 160 miles) offers a special advantage in the long-term planning of railway services. When an opportunity like this exists, it would be a very shortsighted management which failed to do what it could to concentrate the slower-moving trains on one line, leaving the other free to handle a greatly increased number of fast trains. This is one of the more important considerations behind the G.C. line decisions, and provides the grounds for the most effective compromise.

To the management of the London Midland Region, now responsible for the G.C. as well as the Midland line, the G.C. presents itself as the means of securing three very valuable aims. First, to concentrate on it a large proportion of the heavy freight traffic between the Midlands and London would give much more freedom of movement, as suggested above, on the Midland route for passenger trains running at the highest permitted speeds. Secondly, withdrawal of passenger service on the G.C. route, except where it has the advantage in distance, can be a way of bringing about substantial economies; a figure of £140,000 a year was mentioned at a recent T.U.C.C. inquiry. Thirdly, the G.C. route is ideally placed for handling the steadily expanding parcels traffic of the Region. It happens that a high proportion of all

(Continued on page 10)

ELECTRICAL EQUIPMENT for ROAD AND RAIL



Over 3,000 trolleybus equipments have been supplied by Associated Electrical Industries—the photograph shows the first trolleybus ever to be put into service in Oporto, and is one of an order for twenty such trolleybuses fitted with A.E.I. electrical gear on a B.U.T. chassis and locally built body.



Railway installations have been supplied for all parts of the world—the photograph shows a Type 2-1200 h.p. Co-Bo Diesel electric locomotive for British Railways hauling a 420 ton train near Wetherby

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LORRY—BUS—COACH

Bristow: Net Loss is 41 Vehicles

AT the end of two public inquiries by the Metropolitan Licensing Authority and an appeal before the Transport Tribunal arising out of the unauthorised substitution of heavier vehicles on various A-licences, C. Bristow, Limited, member of the Davis haulage group, has lost 41 vehicles on A-licences. This is made up of 33 vehicles on A-licence, renewal of which was refused by the licensing authority on Christmas Eve in a written decision, and eight vehicles on three special A-licences, no application in respect of which can be entertained until the expiry dates (July 31, September 30 and November 30, 1960). Mr. D. I. R. Muir says he wishes he could say "without qualification that the Davis group had purged its offence." He intends that it shall be permanently deprived of the 33 vehicles and shall curtail its activities accordingly. This intention will be exercised in dealing with all future applications for additional vehicles.

At a public inquiry on December 22 the licensing authority heard renewal applications by Bristow in respect of in all 62 vehicles, on one A-licence (33 vehicles), six special A-licences (25 vehicles) and one B-licence (4 vehicles). He also called upon H. A. W. Transport, Limited, J. Bennett (Transport), Limited, and Tozers Transport, Limited, to show cause why licences should not be suspended or revoked for similar alleged offences. In one case a vehicle of 18 cwt. was replaced by another of 4 tons 14 cwt., it was stated. These are also members of the Davis group. C. Bristow had 83 vehicles on licence, mostly in the Metropolitan area, and the group as a whole over 300. In August the licensing authority revoked licences in respect of 47 vehicles and that decision has just been upheld by the Transport Tribunal. The effect of the present applications, if granted, would have been to restore all but eight to the road.

In deciding on the penalty, Mr. Muir says that as the fraud was perpetrated by a person or persons acting for the group as a whole the simplest and fairest way would be to levy an appropriate penalty on the largest company involved in the certainty that it will be borne by the group as a whole. That was why he took no action in respect to the three other companies involved. Had he not been influenced by promises made for the future by Mr. Solly Davis, described as group commercial manager, evidence of inconvenience to customers and statements about the value of the services provided, he would have refused all the Bristow renewal applications and acted on the three other companies. He is satisfied that there is a comparatively small, but nevertheless adequate surplus of A-vehicles in the Metropolitan area to take care of any demand even if this extreme penalty had been exacted.

At the public hearing, Mr. Solly Davis mentioned that a retired detective-inspector had been engaged to sort out licensing tangles and it was the intention to merge some of the smaller companies of the six in the group to this end. He had been "on his belly—driven crazy" by the task and expected the licensing authority's staff was in a similar condition. "No, they are NOT," was the sharp retort from Mr. Muir. Mr. C. R.

Beddington, who appeared for Bristow, based his case on the great inconvenience to trade if so many vehicles were removed from London, where there was already a great shortage of haulage. It was stated that 22 hauliers had expressed themselves unable to hire to Bristow if it lost the vehicles. Seven customer witnesses were called, concerned with fruit and vegetable imports, other imported commodities, a carton manufacturer, and a scrap dealer.

Reduction of Vehicle Bases Sought

AFTER hearing an application by an Aberdeen haulier to consolidate its fleet of lorries in the city, Mr. Alex Robertson, the deputy Scottish



Atkinson with sided body and side loader for the concrete industry; right, a special 12 ft. 1 in. wheelbase Guy Warrior with B.M.C. 5.1-litre 90-b.h.p. diesel engine for Tate and Lyle distribution. It is rated a 7-tonner and incorporates customer requirements, including front-opening cab doors

area Licensing Authority, said at a sitting of the traffic licensing court in Aberdeen on December 15: "This is a most unusual case and I have decided to defer my decision until I have more evidence." John Rhind (Transport), Limited, asked that 28 vehicles operating under special A-licences—15 in London, nine in Glasgow and four at Perth—should be transferred to its Aberdeen headquarters and consolidated as one fleet with 12 vehicles operating from Aberdeen under A-licences. Munro's Transport (Aberdeen), Limited, was given permission to change the base of four of its vehicles from London to Aberdeen and of three vehicles from Glasgow to Aberdeen. Charles Alexander and Partners (Transport), Limited, was allowed to change the base of one of its vehicles from Liverpool to Aberdeen as Mr. Alexander claimed it was inconvenient to maintain it at Liverpool.

Nottingham Haulier Fined

FINES and penalties totalling £260 were imposed on James Gamble (Transport), Limited, the Carlton, Nottingham, haulier, and on seven of its drivers, after it had admitted a total of 53 hours summonses. The company pleaded guilty to 20 summonses for failing to cause its drivers to keep a correct record of hours, five for permitting drivers to drive so that they had not at least 10 hours' consecutive rest, and three of failing to produce three record sheets when required to do

so by the licensing authority. It was fined a total of £224 and ordered to pay £21 costs. The fleet comprises 60 vehicles.

Trolleybus Abandonment

THE Mexborough and Swinton Traction Bill, giving authority to the Mexborough and Swinton Traction Company to discontinue trolleybus services, passed the House of Commons just before the Christmas recess, and goes to the House of Lords.

Third Bus Wage Claim

AT a meeting of the National Council for the Omnibus Industry held in London on December 22, the trade unions presented claims for wage increases (a rise in standard rates of £1 per week) for all classes of workers employed on the company side of the provincial bus industry, together with alterations and improvements in the conditions of service of skilled maintenance workers. The unions also requested the Council to consider a revision

self with issuing a strong warning. An associated company, E. Dudley (Transport), Limited, was also before him on similar grounds, having been fined £271 and 10 guineas advocate's fees, on 77 charges. The records, said Major Eastwood, showed payments to both company's drivers of 70 and 80 hours for a five-day week, and explanations that they were engaged on the loading bank or on other work would not do. The law said that any such work must be included in the drivers' permitted hours. Here also he issued a warning.

B.R.S. Speed Limit Agreement

BEHIND the bald announcement by British Road Services that its 30-m.p.h. speed limit agreement, reached as long ago as June, 1957, will be brought into force on January 4 lies 2½ years of further negotiations before the trade unions were satisfied that none of their members would suffer loss of earnings. The basis of the rescheduling agreement is that the working day of driving staff is reduced by one hour, i.e. to a normal maximum of 10 hours without loss of pay or lessening in the amount of work done during a working day. This is being achieved by revising running schedules, adjusting all other working schedules and adding a 15 per cent bonus to basic rates.

New arrangements concerning night pay, grading of drivers and compensation for plus payments (inherited from acquired undertakings) come into operation on the same date. Revised schedules have been examined through the joint negotiating machinery. In the case of vehicles of five tons or less carrying capacity the bonus is stated to be initially on an experimental basis and "it is hoped that the results of the experiment will be justified." Contractual and other obligations will make it necessary for the 10-hour day to be exceeded for the time being in certain sections, but only on the specific authority of the board of management.

Plus payments will continue in force for the time being. Instead of night money at a flat hourly additional rate, hours worked between 9 p.m. and 6 a.m. will be remunerated at time and a fifth, but a regular night worker will be paid thus for the first nine hours of night duty, irrespective of the actual commencing time. Overtime will be paid additionally at standard rates based on plain time worked. As regards grading of drivers, new entrants will normally take the lowest-graded vehicle in a depot and promotion will be on the basis of tests and seniority. A driver will retain his grading thereafter, even though required to drive lower-graded vehicles from time to time. There will be a 12-month probationary period when a driver is up-graded.

Bus and Coach Developments

Peter Irvine and Sons, Salsburgh, seeks the Shotts-Airdrie route of Greenhields Bus Service.

S. and F. J. Barlow, Brimington, applies to modify excursions and tours from Dronfield and Brimington to incorporate those of F. H. Doughty (E. M. N. Doughty and E. J. K. Hopkinson).

Yorkshire Traction Co., Limited, seeks to link its Barnsley-Kendray Estate and Barnsley-Park House Estate services as a circular route.

Gelligaer U.D.C. and West Monmouthshire Omnibus Board propose to divert their joint Blackwood-Bargoed service to serve the Sunnybank housing estate at Blackwood.

From January 6, London Transport Central bus route 212, Finsbury Park Station—Muswell Hill Broadway, will be operated with double-deckers, the railway bridge at the top of Muswell Hill having been widened and strengthened. At the busiest period, the morning peak, there will be 38 buses an hour on the section of this very busy short route between Finsbury Park and Crouch End Broadway (a midway terminus) compared with 46 an hour with single-deckers. The limited stop service will be continued. The displaced RF-class buses go to Kingston area routes.

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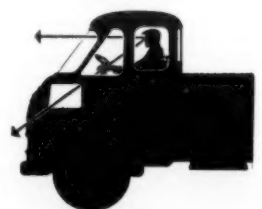
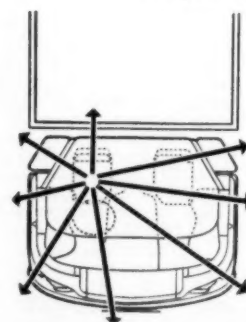


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GOVERNMENT AND ROADS AND ROAD TRANSPORT

2—Highway Development

By L. J. DUNNETT, C.B., C.M.G., Permanent
Secretary, Ministry of Transport*

GOVERNMENT intervention in highway administration illustrates development from a negative to a positive control. From as early as 1555 the cost of repair was a charge on the parish. In those days, however far he travelled, the parishioner was, in theory at least, making a contribution to the repair of the roads. This usually took the form of his own labour, but in practice repairing was really no more than the removal of impediments from traditional tracks, and the labour, including the surveyor appointed to oversee the work, was often unwilling and decidedly unskilled. The roads were quite unfitted for the new traffic of the seventeenth century, and the idea, not in itself new, that "every person ought to contribute to the repair of roads in proportion to the use they make of, or the convenience which they derive from them" gained a great deal of favour. This assumption naturally commended itself to the country gentlemen who sat in Parliament and who had been contributing to local upkeep, and it led to the turnpike trusts.

Tolls had indeed been introduced three centuries earlier. The first three in England were in London and date from 1346, for Gray's Inn Lane and for the roads between Charing and St. Giles and St. Giles and Temple Bar. But the first regular toll gate was established in 1663 for the Great North Road, and the drive in the upkeep of main roads was directed through the new turnpike trusts. The key feature was that the trusts were companies which provided a service on a business basis. The administration of the turnpikes varied tremendously, not because of the conditions laid down in the thousands of Acts under which the trusts were set up (they were more or less identical) but because of the traffic and the road system each had to deal with and because of differences in the quality of management. That the trusts were originally intended as ad hoc measures may be inferred from the fact that their term of life was limited, usually to 21 years. There was, however, no difficulty in securing extensions of time, and it thus came about that in an effort to remedy the condition of the roads Parliament had set up semi-permanent business organisations for many of which the main object was making money. Toll-farming in England and Wales became as much a profession as tax-collecting in the Republic of Rome.

Turnpike Trusts Revivified

Curiously this unintended effect of Government intervention—if it can be called intervention—created out of itself a secondary effect, which impelled the system of road administration towards its state today. By the beginning of the 19th century the financial state of the turnpikes had become so serious that the good work they did failed to match the growth of transport demand. From 1806 several committees of the House of Commons expressed their concern at the weakness of the system. General Wade had shown in the Highlands what could be done by a single authority entrusted with the task of building whole new roads at one go. The pressure for improvement found a release in the state of the London-Holyhead road, the passage of which had become a famous hazard for Irish members of Parliament and for the mails of the General Post Office. This was a critical moment and, in the old phrase, the time called forth the man—or rather the men—Telford and Macadam.

The Government commissioned Telford to survey the London-Holyhead route and in 1815 persuaded Parliament to employ him to reconstruct it under a body of commissioners. The six Welsh turnpikes for the 85 miles in Wales were merged into a single company controlled by the commissioners, but the significant thing was Telford's introduction of a new system of methodical management. The road was divided into three parts, each under a surveyor. Under each surveyor were six foremen, each of whom were responsible for a few miles of construction and for the hired labour. By 1830 the road was completed and the Menai Bridge had been built. Under the influence of the Board of Agriculture Macadam became a kind of consultant to successive Parliamentary committees on the state of the roads, and he and his sons familiarised over 100 turnpike trusts with the ideas of amalgamation and professional management. Macadam was the force behind the creation of the Metropolitan Turnpike Trust, which reconstituted 14 trusts to the north of the Thames into one. The need for the larger administrative unit was indeed becoming obvious. In the review of the system which led to the famous Highway Act of 1835 there was a great chance, but the chance was missed, and although the Act abolished statute labour and team duty the parish remained the administrative unit.

Parish Administration

With the coming of the railways the stage-coach disappeared, and with the regular stage-coach income gone the turnpike system crumbled away. Telford and Macadam had no real successors, and roads became once more a parochial affair. It was the parish, still responsible for the roads off the main highways, miserably though it managed them, that carried through the next 100 years the seed of today's system of highway administration. The strength of the parochial system was that it laid a duty on the ordinary citizen to render service; the weakness of the turnpikes was that they depended for their income on the transport they served. Once it went they went. Moreover, even at their peak, just as the railways launched their onslaught, they controlled no more than one-sixth of all highways. Some 100,000 miles were still in the hands of the parishes.

An important feature of the 1835 Act was that it gave statutory recognition to the swing from amateurism to professionalism which Telford and Macadam had preached and begun. The rate for the roads was to be levied by a surveyor appointed by a board of management elected by the ratepayers in vestry. Despite the recognised need for making the highway authority a larger administrative unit it was impossible for various political reasons to legislate for this in 1835, and it was nearly thirty years before powers were secured. The Highways Act, 1862, gave power to the justices

in quarter sessions to combine parishes into highway districts compulsorily. This measure failed because the highway districts were left without guidance from the Central Government and were required to find their own solution to the substantial problems of organisation and administration they were faced with, and also because of the jealous opposition by the parishes.

Centralising Force

The long tug between them and the centralising force began its end in 1872, when it was decided that the highways and turnpikes outside towns belonged with public health. The responsibility for them was transferred by the Public Health Act of that year from the Home Office to the Local Government Board, and with the transfer disappeared the ancient, manorial notion of road jurisdiction as something to do with police and magisterial functions. The new conception, bracketed on the sanitary authority district, meant that rural roads were placed on the same footing as urban roads, which had been under the control of urban sanitary authorities since 1848.

The Local Government Act, 1888, laid upon the county council the duty of maintaining all main roads in the country, and the Local Government Act, 1894, formally abolished the parish system. By the end of the century the process of transition had been completed and the last parish and the last turnpike had surrendered. The arrival of the bicycle and the motor vehicle gave highway legislation its last big push before modern times, and led to the Development and Road Improvement Funds Act of 1909.

Importance of 1909 Act

For the present purpose the importance of this Act is twofold. First, after 50 years it is still the main measure under which the Government contributes to local highway authority expenditure on roads, and secondly it perpetuated the principle that the highway authority for roads should be local. Although the parish councils had ceased to be highway authorities, the county councils and the county borough councils (and in some cases the borough and urban district councils), merely inherited their powers on the larger scale. The 1909 Act is the last piece of major highway legislation which rested on the advice of a committee of inquiry that had the opportunity of recommending a national authority for the upkeep and improvement of all important roads. The Departmental Committee of 1902-03, presided over by the Parliamentary Secretary of the Local Government Board, went so far as to propose that all main roads should be administered by county roads boards (county boroughs being included in the counties), the Central Government providing only financial assistance by way of grants. This would have reduced the number of administrative authorities in England and Wales to 60.

But the 1909 Act clung to the old system of leaving responsibility with more than 1,000 local authorities (not counting rural district councils), and this is the situation to this day. I do not mean here to argue for or against the present system; I merely wish to point to a critical issue on which the Government and Parliament had to make up their minds at a certain stage in the history of the road, when, by whatever decision they reached, they were to impose a form on the system of road administration that would have a powerful and far-reaching effect.

Grants-in-Aid

Broadly speaking the effect of the 1909 Act has been this. It continued the principle whereby the administration of the roads was placed in the hands of competent public bodies, but by introducing a comprehensive arrangement of grant-in-aid it inevitably inclined the authorities to be dependent on the Government for whatever they wanted to do. A feature of the Act is that it says nothing about how the central funds are to be spent or about how much is to be spent. These matters were delegated to the Minister to decide as he and the Government thought fit, subject, of course, to approval and examination by Parliament annually.

Things were carried a stage further by the Ministry of Transport Act, 1919, which gave the Minister power to classify roads in order to administer the funds at his disposal. But the next major change came when the formative power given to the Government by the Acts of 1909 and 1919 was increased by the Trunk Roads Act of 1936 and its extension in 1946. The distinction between main roads and secondary roads had been recognised in the 19th century; the Trunk Roads Act gave the first statutory expression to the notion of an organic structure of roads. Certain key roads were made independent of the wealth, interest and capacity of the numerous highway authorities through whose areas they passed (except for London, and for the most part, the county boroughs) and made over to the entire control of the Minister. From 1936 until the coming of the motorways these roads were to be maintained and developed as the country's main arteries.

Special Roads Act

The most important piece of highway legislation since the Trunk Roads Act is the Special Roads Act of 1949. This is the Act which enables the Minister—and any other highway authority—to build roads designed for certain classes of traffic only. It was introduced with motorways in mind. Its chief purpose is to enable the Minister or other highway authority to construct special roads in accordance with schemes made under the Act. Schemes or Orders can be made, among other things, for prescribing the route, for prescribing the classes of traffic to use it, for appropriating existing roads for absorption in the new one and for limiting access to it.

The total mileage of all public roads in Great Britain in 1958 was 191,200, made up in this way:

Trunk roads	8,300
Class I roads	19,700
Class II roads	17,600
Class III roads	48,900
Unclassified roads	96,700

So much for the past. It illustrates how highway administration, like so many other of our institutions, has developed over the centuries slowly.
(Continued on page 10)

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* Abstract of Henry Spurr Memorial Lecture read before the Institute of Transport. The first portion appeared December 28, 1959.

PUBLISHED in Christmas week by H.M. Stationery Office was the report made by the London Travel Committee to Mr. Harold Watkinson, then Minister of Transport, and signed by Mr. Alex Samuels on July 28, 1959, recommending construction of the proposed Victoria Line tube between Victoria, Kings Cross, Finsbury Park and Walthamstow.

Terms of Reference

In its terms of reference the Minister asked the London Travel Committee to consider and set in train where practicable further measures, including staggering of working hours, so as to relieve congestion at the peak periods on (a) roads within and leading into and out of Central London; and (b) services to and from Central London provided by London Transport and British Railways. The committee was also asked to recommend any measures to further these objects which the committee considered desirable but was itself unable to initiate. At its first two meetings, when it surveyed the travel problem in London and its complex series of component problems, the committee was impressed by the major part played by the Underground and surface railway services in providing for peak-hour demands and decided to investigate further how these services could be better fitted to carry passengers more speedily and in less congested conditions.

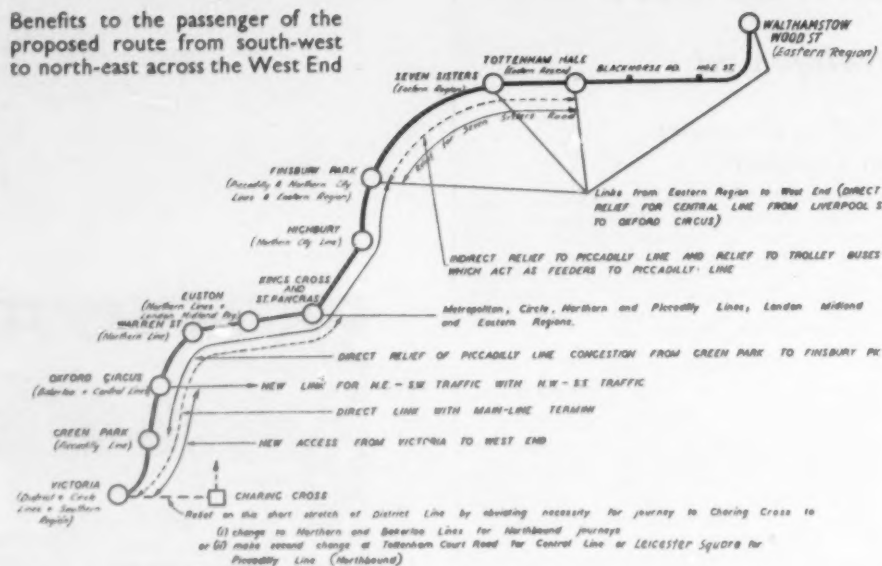
Seeing that British Railways is now implementing various modernisation schemes on suburban lines in London, the committee turned its attention to London Transport's rail services and to the Victoria Line scheme, which had been considered in the past by expert committees, for example the London Plan Working Party and the Chambers Committee of Inquiry into London Transport, and put forward by them as the most urgent and desirable work of new tube railway construction which would at the same time enhance the value of the Underground. It was authorised by Parliament in the B.T.C. Act of 1955. In February, 1959, the committee appointed a working group with the following terms of reference: "Within the terms of reference of the main committee, to consider the desirability, practicability and economics of further underground and surface railway construction on routes to, from and within Central London." The detailed examination of the proposals for the Victoria Line has been carried out by this working group assisted from time to time by officials of the Ministry of Transport and of the Road Research Laboratory. The working group, through two of its members, has been provided with detailed information by London Transport and British Railways. In addition it has met representatives of local authorities from the areas which would be served and has examined suggestions from private individuals.

Background Considerations

The report first gives the background to travel in the London area; a population of just over 10 million spread over 2,000 square miles is served by British Railways and by London Transport road and underground railway services, which respectively generated 31.7, 46.6 and 21.7 per cent of the passenger-miles, but obtained respectively 14.2, 67.1 and 18.7 per cent of the passenger journeys. Plans for improvement, the peak problem and standards of comfort are examined; the last-mentioned are quantified by the peak-hour overload—the yardstick being that 125 standing passengers for 100 seated is tolerable. On the Central Line east of Liverpool Street the figure reaches 140; the Piccadilly

VICTORIA LINE

Benefits to the passenger of the proposed route from south-west to north-east across the West End



dilly reaches 160 between Holborn and Holloway Road on occasion.

The route of the Victoria Line and its role in relieving these extremes of congestion is discussed. Other sections deal with estimated traffic and financial results, engineering and other factors affecting construction, including possible reduction of cost by new tunnelling techniques; and other investment which might achieve the same results, but, in the committee's estimation, would not do so. Schemes for road improvements of the same cost are listed in appendices, along with details of interchange facilities.

Conclusions

In its conclusions the committee states that it has examined the Victoria Line, not merely as a project on its own merits, but also against the background of present-day travel conditions in London. "We have shown that the vast majority of workers coming into Central London use public transport. We have also tried to foresee the future pattern of travel in London, and to assess the effects of the Victoria Line in meeting future demand. We think that it is reasonable to expect that in years to come by far the greater number of daily travellers into and about Central London will continue to use public transport, especially the railways. As part of our general policy we consider that public transport facilities should be improved and kept up to date to encourage their use and to cater for the continued demand."

The first main conclusion is that the Victoria Line is essential to meet present and expected future demands for travel on the Underground system. It would benefit thousands of Londoners and would enhance the value of the Underground

by filling a gap in the present network. The committee is satisfied that the line is the most effective means of relieving the severe peak hour congestion on many of the present Underground services and of providing Londoners with quicker and more direct travel within the central area of their city and from the north-eastern suburbs to the important business and commercial quarter in the West End. The line will also improve the rail links between Victoria, with its extensive network of rail services to the southern suburbs and coastal towns, and the West End. The line will not only meet present needs; by linking the northern main line termini with the West End and Victoria it will help to handle the expected increased numbers of passengers using these stations as British Railways' modernisation schemes are completed. It will also be able to attract passengers from road to rail and to help relieve congestion on the roads. This view that the line is necessary is not new; it has been expressed over the past few years by several responsible and knowledgeable bodies.

Work Should Start Quickly

The second main conclusion is that the construction of the line should be started as quickly as possible. To fulfil its proper functions the line should be constructed as it is at present planned from Victoria to Walthamstow. To do this would take some six years. There are limits to what can be done to ease Underground congestion significantly meanwhile. While it is true that the new rolling stock now on order for the Piccadilly and Central Lines will provide some appreciable additions to accommodation on these lines, this will still not lower the present overload figures to the limits considered reasonable.

Additional passengers will also be joining the Underground from the suburban lines, which are now being electrified, from the end of next year onwards. "This forecast in no way implies that we think the staggering of working hours will not help to ease congestion. There is no doubt that staggering produces valuable local relief, and we intend to pursue it as vigorously as possible, since it appears to be the only feasible interim measure for helping to spread the peak load on the Underground. But it can only make a limited contribution. Something more is required to meet long-term needs. We have no evidence to suggest that the volume of travel to and from work in Central London and congested travelling conditions will decrease in future; on the contrary, all the available evidence shows that the amount of daily travel will grow and travel conditions become worse if the Underground is not expanded and improved."

No Other Way

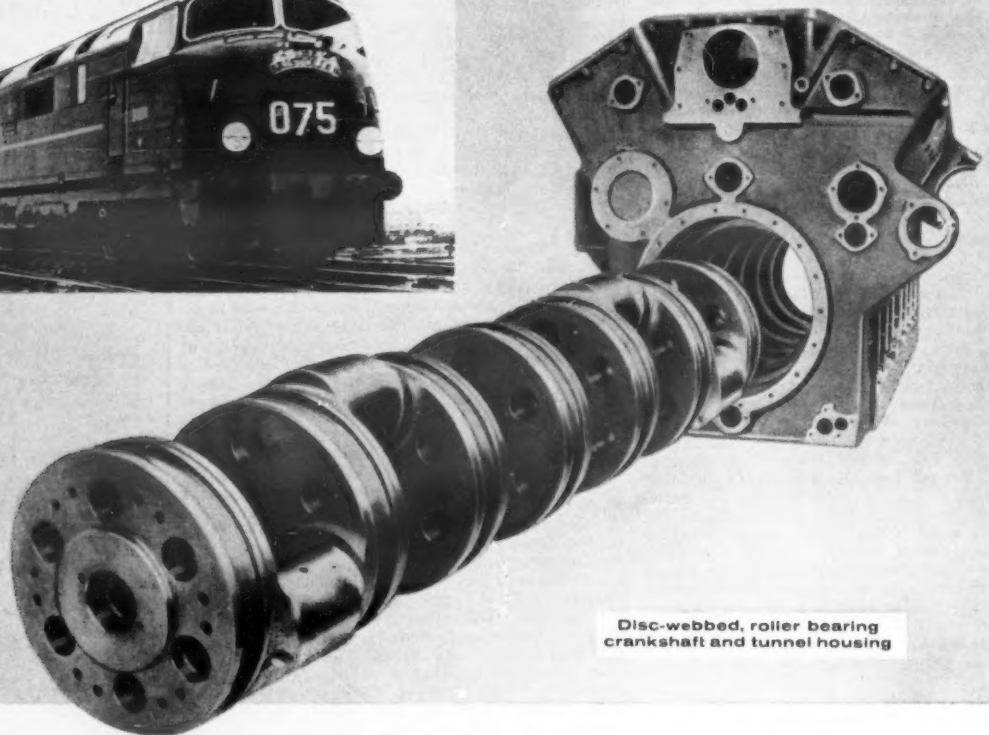
The committee does not think that the purposes achieved by the Victoria Line could be met by the more intensive use of buses or by the present planned schemes for physical road improvements. Bus services in the central area are already badly handicapped by traffic congestion and tend to run irregularly. A more intensive bus service would still suffer from these handicaps. Also, bus services are necessarily slower than the Underground, and are more expensive for regular travellers over longer distances. They do not therefore attract the peak hour passenger travelling over longer distances—indeed, they are not primarily designed to do so, but to cater for the short distance traffic and to act as feeders to and from the railways which are ideal for long distance travel. The most urgent road improvements planned for London would, at best, affect only marginally the passengers who might travel by the Victoria Line. This emphasises the fundamental fact that road and rail serve different purposes and play distinct roles in meeting London's travel and traffic needs. Both are needed. "We do not consider that the present planned level of investment in the road programme should be sacrificed to meet the cost of the Victoria Line. Equally we do not consider that the Victoria Line should be sacrificed to find additional investment in road schemes."

This policy must lead inevitably to heavy capital investment in both road and rail facilities. Nothing is easier than to recommend spending public money, but the committee thinks that this investment, as far as London's travel and traffic problems are concerned, is not only inescapable but justified. There has been no major Underground construction in Central London for over 50 years. During that time the peak-hour pressure on the system has increased to its present intolerable level and will continue to grow in the near future. As a result of the expansion of business activity in the West End, passengers now want to travel between points which have no direct rail connections.

Similarly, until the new London Wall was opened, no new major roads had been built in inner Central London since before 1914. Many roads and intersections in the central area are now inadequate to deal with the present weight of traffic, let alone any future increase. It is no longer possible for the arrears to be overtaken and made good by inexpensive temporary expedients and palliatives alone, necessary though these are.

(To be continued)

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Disc-webbed, roller bearing crankshaft and tunnel housing

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Bristol Siddeley Engines Limited produce Maybach® rail traction diesel engines. Covering a power range from 400 to 2,000 hp, these diesels are amazingly reliable and have shown that they can achieve major overhaul lives of 12,000 to 16,000 hours!

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The pistons are pressure-oil cooled. This gives very efficient heat dissipation and reduces liner and gas ring wear to a minimum. The roller bearing, disc-webbed

crankshaft is exceptionally rigid within its tunnel housing, and in practice withdrawal is not normally necessary before 12,000 hours running. So low is big end bearing wear that in some cases the protective lead flash has been found to be intact when examined after 15,000 hours running!

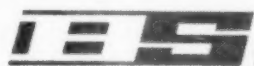
Since the cylinder bore and stroke, and the majority of components, are identical in all models, spares stocks are considerably reduced. Servicing also has been greatly simplified because much thought has been given to accessibility and the removal of components. And the engines are suitable for both hydraulic and electric transmission.

World-wide application

Maybach rail traction diesel engines are in service all over the world and have built up an unsurpassed record for reliable and economic operation. Bristol Siddeley Maybach engines power the new diesel hydraulic locomotives of British Railways Western Region and an additional order for a large number has just been placed.

For further information please write to: Maybach Sales Manager, Bristol Siddeley Engines Limited, PO Box 17, Coventry, England.

*Under licence from Maybach-Motorenbau GmbH



BRISTOL SIDDELEY ENGINES LIMITED

REPLACEMENT OF IRISH NARROW-GAUGE RAILWAY

Road for Rail in County Donegal

2—PROVISION OF FREIGHT FACILITIES*

THERE were five mail workings between Strabane and Lifford Halt on Monday to Friday and four on Saturdays. The last one was covered on Saturdays by a normal railcar service working right through to Letterkenny with a balancing trip in the opposite direction. On other days it was provided by *Phoenix*, the energetic little shunting locomotive which normally bustled up and down the yard at Strabane.

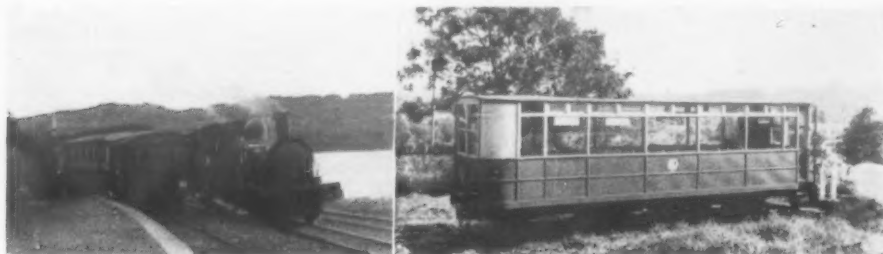
Railcar Services

As regards passenger services on the railway the last timetable provided four workings in each

whence it returned after church service. This section of the branch also had an evening railcar each way on Tuesdays.

Road Transport

While it will have been gathered from much that has been said that the railway operation has continued on quite a substantial scale, there is no blinking the fact that the undertaking, if it has no substantial profit to show, would have cost its sponsors a great deal more each year than it has, if it had not been for its road transport operation. Here again further subdivision is desirable for the



A November scene at Killybegs with the railcar reversing into the platform to make the first morning up journey; trailer No. 3 was originally a Drewry car of the Dublin and Blessington Steam Tramway

direction between Strabane and Letterkenny with a fifth on Saturday to which reference has already been made and which operated each weekday during the summer. On the main line from Strabane to Donegal there were four down trains with two additional workings as far as Stranorlar, while in the up direction there were three trains

bus services are not really remunerative and it is, in fact, the road freight operation which has been the main support of the C.D.R. This has necessitated careful management and, particularly, planning to maintain vehicle utilisation at the highest possible figure while keeping the fleet at the minimum total compatible with meeting requirements.



The first diesel-engined railcar to enter service in the British Isles was No. 7 of the C.D.R. with a Gardner 6L2 power unit. The chassis was built by the G.N.R.(I.) and the body by O'Doherty, of Strabane

from Donegal and a further three starting at Stranorlar. All three from Donegal had actually emanated from Killybegs and there was a balancing number of services worked on the down line. There was an additional Saturday train in each direction. Last summer there were four workings each way each weekday on that section, and four

The policy in recent years of using larger vehicles and reducing the number of small ones in the fleet has been amply justified, as has the decision to purchase only diesel-engined units. The 37 lorries now in service represent a reduction of approximately 10 per cent on the figure of four years ago and a quarter of the fleet comprises Leyland

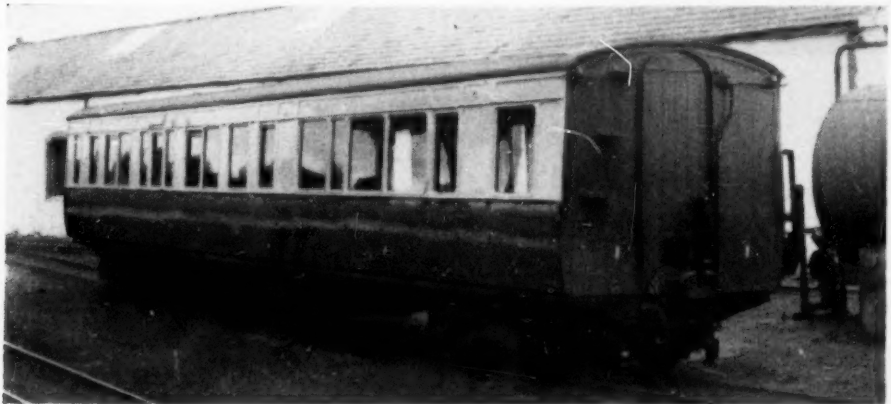


No. 11, the tractor "Phoenix" which, purchased from the Clogher Valley Railway in 1932 and converted to diesel operation, has shunted steadfastly at Strabane ever since; right, No. 4 "Meenglas" built by Nasmyth, Wilson in 1907 and originally No. 16 "Donegal"

from Strabane to Donegal with a fifth on Saturday, and a further two (three Monday to Friday) as far as Stranorlar, while in the up direction there were seven services from Stranorlar to Strabane, of which three came from Killybegs and Donegal and an additional Saturday working from Donegal to Stranorlar.

Comet and Super Comet units, among them a 10-ton articulated vehicle. There are also 25 Bedford, two Ford Thames and an Austin.

Flexibility must be achieved, because some of the more remunerative loads, such as fish, may materialise in unexpected quantities at unexpected times for diverse destinations. The C.D.R. is for-



Former U.T.A. narrow-gauge coach in County Donegal colours at Stranorlar. It had corridor connections when in N.C.C. Ballymena—Larne boat trains

The Donegal to Ballyshannon branch had had three workings each way on Monday to Friday and four on Saturday in both winter and summer for some years, but it had also retained the distinction of having the only public train working of the C.D.R. on Sundays with a railcar which left Ballyshannon at 10.30 a.m. for Rosnowlagh

tune in one respect, namely, that seasonal traffics such as potatoes, limestone and county council contract work tend to dovetail rather than clash and this assists in reaching the desired vehicle utilisation level. So high is this that, on the occasion of a recent visit to Stranorlar, the only freight vehicle to be seen during a period of some six hours was the Ford van used latterly for the

(Continued on page 14)

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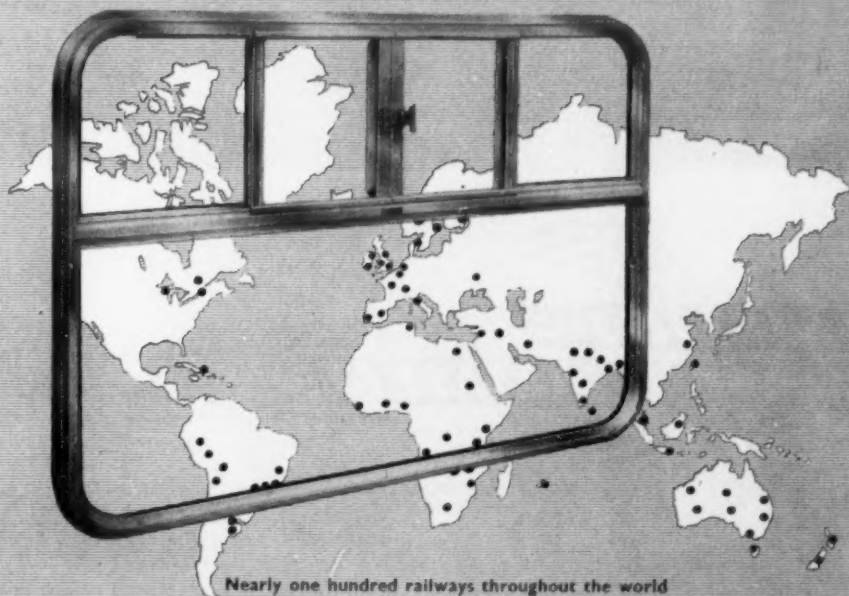
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* No. 1 appeared December 26, 1959.

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NEWS FROM ALL QUARTERS

Manual Weight Lifting Regulations

From July 1, 1965, the maximum weight of any load consisting of a sack or bag, together with its contents, which may be lifted or carried by an agricultural worker (as defined) must not exceed 180 lb. Special provisions apply to young persons.

Withdrawal between Newbury and Lambourn

Withdrawal of the passenger train service between Newbury and Lambourn is announced by the Western Region on and from January 4 next. A freight service will be maintained between Newbury and Welford Park.

S.K.F. to Manufacture in Brazil

S.K.F. (Svenska Kullagerfabriken) is to make and sell ball and roller bearings in Brazil. The anticipated output of 4 million bearings annually is primarily intended to help to meet the needs of the country's expanding motor industry.

G.M.C. Offer for Holdens

The General Motors Corporation has offered to purchase all the preference shares held by Australians in General Motors-Holden's, Limited. The company manufactures the Holden range of cars, station wagons and light trucks and partially manufactures and assembles other General Motors vehicles.

Stations Not Closing

In May, 1959, the London Midland Region announced proposals for the closure of certain lines and stations. As a result of subsequent examination it has now been decided not to submit to the appropriate Transport Users' Consultative Committees any proposals for closing the following stations either because a loss of revenue would be entailed or the savings would not be great enough to warrant closure: Bickershaw and Abram, Bolton le Sands, Braystones, Bromley Cross, Dalston, Drigg, Gargrave, Green Road, Hest Bank, Linby, Long Buckby, Milnthorpe, Newstead, Normacot, Silecroft, and West Leigh and Bedford.

European Road Progress

France, Italy, Switzerland and Austria are to set up new bilateral working parties under the European Conference of Ministers of Transport to co-ordinate the development of the major international links forming part of the two super-highway systems which should come into existence in the next few years, the one running north, and the other south, of the Alps. Although European road budgets have not been doubled, as recommended by the European Conference of Road Ministers, considerable expansion was shown in 1958 expenditures and European road expenditures are expected to show a 15 per cent increase in 1959. An additional 281 miles of what are termed expressways were opened to traffic in Europe in 1958. These included 80.7 miles in West Germany, eight miles in Great Britain, 77.7 miles in Austria (Vienna-Salzburg Expressway), 19.6 miles in Belgium, 74.5 miles in Italy (Highway of the Sun and Serravalle-Tortona highway) and 20.4 miles in the Netherlands.

Greenwich-Blackheath Road Link

London County Council has now prepared the draft plan for a new four-lane road forming part of the north-south cross route under the Thames via the duplicated Blackwall Tunnel. The road would run from the end of Tunnel Avenue in Greenwich to the junction of A2 with Shooters Hill Road in Blackheath and would include flyovers and slip roads.

Tilbury Ferry Objections

Essex and Kent County Councils are to be asked to oppose the British Transport Commission Bill in the House under which the Commission seek to be released from their legal obligations to operate the Tilbury-Gravesend ferry after the Dartford-Purfleet tunnel is opened. Despite an assurance from the Commission that it would not stop the ferries until it had an opportunity of assessing the demand for such services after the tunnel had been opened, the feeling is that the Bill is premature.

German Diesels for U.S.A.

Two major railway rolling stock export orders were recently announced. Krauss-Maffei of Munich has received an order for six diesel-hydraulic locomotives of 4,000 h.p. each from two United States railroads. They are to be used for heavy goods traffic in the Rocky Mountains and represent the first order for diesel locomotives given by United States railway companies to a foreign country, it is claimed. Linke-Hofmann-Busch, a railway wagon builder, of Saltgitter-Waternstedt, near Hanover, announces that it has received a DM. 9 million order from the Persian State Railways for 200 bogie tank wagons.

New Sleeper Fixture from Hungary

To replace a system for the fixing of rails to concrete sleepers, in which rails were bolted to the fillers inserted in the sleepers, two Hungarian engineers are said to have developed a new tie method. Rubber and metallic tie pads are inserted into the sleeper with no use of bolts and in such a way that the rails transmit the shock and stress to the sleeper elastically. A locking device, opened by pressure on the rails, closes again automatically when pressure ceases. Advantages of the new methods are said to be the elimination of violent shocks and of the necessity to remove and replace heavy sleepers to drive in fillers every time rail is relaid.

Car Sleeper Improvements

Next year, the North Eastern Region is to improve the services operated by its car sleeper trains. Many helpful suggestions have been received on ways and means of improving certain of the facilities provided during the journey, and these have been carefully considered. One popular request was for two-berth sleeping accommodation to be available in addition to the four-berth accommodation previously provided. This suggestion is likely to be adopted on the York-Inverness service and on this service also the sleeping-cars may be staffed by attendants who would be able to serve tea and biscuits as well as see to the comfort of passengers.



532 TUBE CARS FOR PICCADILLY LINE

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COMMERCIAL AVIATION

World Traffic in 1959

AER LINGUS DROPS PLAN

TRAFFIC carried by the scheduled airlines of the 74 member nations of the International Civil Aviation Organisation increased again in 1959, according to figures issued this week in Montreal. Air traffic has increased each year since 1945; however, the rate of year-to-year increase has been less marked during the past five years than it was in the preceding ten. In 1959 the total number of passengers carried was 96 million, a 10 per cent increase over last year's 87 million; the equivalent figure in 1949 was 27 million passengers. Passenger-miles performed increased by 12 per cent over 1958, cargo ton-miles by 14 per cent and mail ton-miles by 11 per cent. There was one significant divergence from this pattern of increases: in spite of the higher passenger and passenger-mile figures, the total number of hours flown decreased by 1 per cent; this figure reflects the high speeds of the new jet transports, which were used on the world's air routes in significant numbers for the first time during 1959.

Eagle in Cheap Fare Move

Eagle Aviation, Limited, is providing the aircraft for a series of flights organised by the Commonwealth Union of Trade. Members of this body will be able to travel at fares well below those of tourist and colonial coach class services between London and Hong Kong with traffic stops at Nicosia and Singapore, and between London and Nairobi with a traffic stop at Malta. The flights on each route will be approximately fortnightly, the first to Nairobi—being due to leave London on January 28.

B.O.A.C. Starts on Avon Overhauls

The first pure jet Rolls-Royce Avon engine (of the type which powers the Comet 4) to be handled by the British Overseas Airways Corporation engine overhaul factory at Treforest, South Wales, has just completed overhaul and test run. The engine was overhauled in the training factory, where the methods to be employed in the main factory when the production flow is started were studied, and it was test run in a newly converted jet cell at the test beds at Nantgarw. Avon engine overhaul was scheduled to commence in the main factory last month. The Avon engine initiates the second stage in a six-year, three-stage programme of developments at Treforest covering the transition from piston engines to gas turbines. The third stage will be achieved when the Rolls-Royce Conways powering B.O.A.C. Boeing 707s are overhauled at Treforest in 1961.

Britannias Go To Transcontinental

Two Bristol Britannia 308 propjet airliners ordered by the Argentine airline Transcontinental left Filton on December 16 and December 17 to enter service on the airline's main route between Buenos Aires and New York. The first aircraft left on the morning of December 16, flying via London, Dakar and Rio de Janeiro to Buenos Aires. It was expected to start scheduled services within a week of arrival. Travelling on the aircraft from Filton was a team of Bristol Aircraft technicians and flight staff under the chief test pilot Walter Gibb, who will remain with the airline for some weeks to give advice and assistance during the final stages of training and the initial period of service. The second aircraft left Filton on the evening of December 17, flying via London and Goose Bay to Newark, New Jersey, where it was to collect seats required for installation in the Britannia. Transcontinental's two Britannias are equipped to carry 104 passengers, 16 in a first-class compartment and 88 in a tourist-class compartment. They will fly to Buenos Aires—New York service with intermediate stops at Sao Paulo, Rio de Janeiro and Caracas.

New Services Approved

The Minister of Aviation, after considering the recommendations of the Air Transport Advisory Council, has approved the operation of the following services:

A normal scheduled service by East Anglian Flying Services, Limited, between Whitson and September from April 1, 1960, until March 31, 1967, on the route Ipswich—Southend—Ostend.

A normal scheduled service on the route Luton (optional)—Derby—Dublin by Derby Aviation, Limited, from December 20, 1959, until April 30, 1960.

An inclusive tour service by Eagle Aviation, Limited, between London (Blackbushe) and Basel from December 18, 1959, to March 27, 1960.

An inclusive tour service between Manchester and Munich by Derby Aviation, Limited, from January 1, 1960, to March 27, 1960.

An inclusive tour service by B.K.S. Air Transport, Limited, between Southend and Turin from December 19, 1959, to March 26, 1960.

An inclusive tour service by Eagle Aviation, Limited, between London (Blackbushe) and Zurich from December 19, 1959, to March 27, 1960.

An inclusive tour service by Eagle Aviation, Limited, between London (Blackbushe) and Innsbruck from December 19, 1959, to May 1, 1960.

An inclusive tour service by Eagle Aviation, Limited, between London (Blackbushe) and Basel from December 19, 1959, to March 27, 1960.

An inclusive tour service by B.K.S. Air Transport, Limited, between Southend and Munich from December 18, 1959, to March 25, 1960.

An inclusive tour service by Transair, Limited, between Gatwick and Zurich from January 2, 1960, to March 6, 1960.

An inclusive tour service by Overseas Aviation (C.I.), Limited, between Southend and Stuttgart from December 19, 1959, to March 26, 1960.

Aer Lingus Coach-Air Plans Cancelled

It was confirmed last week in Dublin that Aer Lingus had suspended its scheme to operate a low-fare air bridge service between Dublin and Anglesey. This is because the Air Ministry is unable to agree to the use of the R.A.F. station at Valley for scheduled civil operations after March, 1960. The original Aer Lingus plan was to begin operations from April 1, 1960, subject to a final agreement on a continuing use of Valley. The scheme was designed to link Dublin through Valley with a motor coach network serving London and the principal cities of the Midlands and the north of England. Commenting on the position, an Aer Lingus spokesman said: "Naturally we are disappointed. For some years we have been seeking means of providing a coach-air service of this kind at a cost to suit every traveller's purse, but it would be essential to operate such a service from Dublin to an airfield offering the shortest possible air journey. While we have no indication that Air Ministry requirements at Valley are likely to be changed in the immediate future, we hope that at a later stage a situation may still arise which would enable us to go ahead with our plans." It may be recalled that MODERN TRANSPORT has recorded applications by Crossville Motor Services, Limited, for coach journeys from London and Birmingham to Valley.

DISTINGUISHED ELECTRICAL ENGINEER RETIRES



C. M. Cock

Mr. C. M. COCK, M.I.Mech.E., M.I.E.E.,
M.I.Loco.E.

As general manager, traction, of the English Electric Co., Limited, the post from which he retired on December 31, Mr. Charles Matthew Cock has, since 1950, been responsible to the chairman for all railway and other traction activities, including general direction of forward development, design, production policy, commercial matters and negotiation of contracts. He has had a particularly wide experience in the course of a distinguished career in the railway and engineering world, both abroad and in this country. Born in Melbourne, Australia, he received his early experience and technical training at the Melbourne Technical School and with the Victorian Railways. During the 1914-18 war he served in the Royal Navy and saw active service at sea in the Pacific and in the North Sea. In 1919 he joined the construction staff of Merz and McLellan, consulting engineers, in Melbourne, in connection with the electrification of the Victorian Railways' Melbourne suburban lines, and a large power project for the Victorian Electricity Commission. Later he went to India as one of the supervising engineers working on railway electrification. In 1929 he joined the G.I.P. Railway transportation (operating) department and held appointments as distribution engineer and rolling stock engineer before being appointed traction superintendent and later divisional superintendent for the area including Bombay. Between June, 1941, and February, 1942, Mr. Cock was loaned to the Royal Indian Navy and, as in 1914-18, served at sea, this time as lieutenant-commander. It became necessary in 1942 to recall him to his post as divisional superintendent, G.I.P. Railway, because of wartime pressure on the Indian railways. In 1945, he returned to England to become chief electrical engineer, Southern Railway, and on the nationalisation of the railways in 1948, he was appointed chief electrical engineer, Railway Executive. He relinquished that post in October, 1950, to join the English Electric Company. He has been responsible for a number of technical reports and was chairman of the committee which reported on the electrification of the London, Tilbury and Southend Line in 1950 and of the committee which reported on railway electrification in Great Britain (1950-51). President of the Institution of Locomotive Engineers in 1952-53, he was also at that time chairman of the supply section of the Institution of Electrical Engineers. He has served on many of its other committees, was a member of council for eight years and has been awarded three of its premiums, the Ayrton (1948), Ordinary (1950), and Swann (1959) for papers on traction. He is also a member of the Institution of Mechanical Engineers.

LETTER TO THE EDITOR

Canals and Informed Opinion

WATERWAYS CONSERVANCY DEMAND

SIR,—The animus against waterways invariably to be observed in your editorial comments, and epitomised in your description of Mr. Geoffrey Wilson's more discouraging observations as "refreshing," exceeds all bounds in your remarks on the House of Commons debate (MODERN TRANSPORT, December 12). Though the British Transport Commission nowadays never stops saying so (on the well-known principle that any statement that is simple enough and repeated often enough, is accepted as true by most people), the strangulation of canals by railway companies is not an "old canard." There were a few proprietors who were glad to sell out. Most were out-maneuvred and enveloped. The evidence can be studied by doubters in the 12-volume report of the Royal Commission on Inland Waterways.

The individuals responsible for the administration of the nationalised navigations could have little effect, whoever they were, against the Commission's overriding policy. The waterways are a tiny corner of an empire which is 80 per cent railway as to its fixed assets and 70 per cent as to its employees. The individuals in question, however, derive, as to three of the leading five of them, not, it is true from the railways, but from the roads—nowadays the waterways' more dangerous competitor.

Mr. Wilson's comparison of miles-per-lock ratios would be less damaging to British navigations if he had compared all the waterways of France with all the waterways, nationalised or otherwise, of Great Britain. However, what Mr. Wilson had to say about British Waterways, as managers of a business, was this (Column 1574 in *Hansard*): "If we look at the report and accounts of British Waterways for 1958 we find that they made a loss of £640,000. Receipts were slightly higher but the loss was double what it was in the previous year. Costs of administration went up by 20 per cent. The numbers of administrative and clerical staff increased by 8 per cent. Nearly a quarter of the entire staff left and had to be replaced during the year. There may be reasonable explanations of all that, but if the Commission were a private or public liability company, I think the chairman would have to do a lot of explaining at the annual general meeting as to how it came about."

We are sorry you found the debate too long. It was, after all, the first general one on the subject since the war. But we think that impartial reporting would have informed your readers that eight speakers, from both sides of the House, called for a National Waterways Conservancy, and that most of them emphasised the need for operating the waterways as a single system. The reason why there are few applicants for isolated waterways is not "the cost of conversion," because no "conversion" is needed; but the conviction held by most informed persons that waterways cannot be satisfactorily operated as single units, any more than can roads.—Yours faithfully,

ROBERT AICKMAN,
Founder and Vice-President,
Inland Waterways Association.

11 Gower Street,
London, W.C.1.

The Editor is always glad to receive letters from readers on subjects germane to the transport industry, but these should be written as concisely as possible. The opinions expressed therein must not, however, be regarded as having editorial endorsement. Where correspondents desire to use a nom-de-plume it is essential that the Editor should be informed of the name and full address of the writer as indication of good faith.

FORTHCOMING EVENTS

Until Jan. 9.—National Boat Show. Earls Court.

Jan. 4.—Inst. T. (Met.). W. M. Dravers, "The Omnibus Industry and how it is Combating Recession," 80 Portland Place, W.1. 6 p.m.

Inst. T. (E.A.). G. A. W. Crane and W. D. Chaplin, "Some Developments in Hydraulic and Air Suspension of Trailers," 79 Thorpe Road, Norwich. 6 p.m.

Inst. Traf. A. (K. and S.E.). E. J. Cresswell, "Traffic Administration," Whig and Gown Hotel, Maidstone. 7.30 p.m.

Jan. 5.—Inst. T. (Mid.). A. H. Carter, "New Vehicles for the Motorways," Engineering Centre, Birmingham. 6.30 p.m.

I.R.T.E. (W.). J. Langford-Allen, "Use of Plastics in Road Transport," Royal Hotel, Bristol. 6.30 p.m.

I.T.A. (Leeds). W. J. Price, "Transport and Distribution of Coal," Griffin Hotel, Leeds. 7.15 p.m.

S. Wales and Mon. R.D.L.D.S. Sir Leslie Ford, "The Port of London Revisited," Angel Hotel, Cardiff. 6.30 p.m.

Inst. T. (Glos. and Chelt.). T. F. Andrews, "Road Haulage Insurance," Royal Hotel, Gloucester. 7 p.m.

R.C.T.S. (W.M.). E. S. Tonks, "Red Earth and Green Engines," 64 Holyhead Road, Coventry. 7.30 p.m.

Jan. 5.—I.Mech.E. Symposium on recent mechanical engineering developments in automatic control. 1 Birdcage Walk, S.W.1.

Jan. 6.—Riv. S.A. New Year dinner and dance. London School of Economics. W.C.2.

I.R.S.E. E. Morgan, "Electrical Properties of Concrete Sleepers," Inst. E.E., Savoy Place, W.C.2.

I.C.E. Capt. H. R. Cooper, Dugald Clerk Lecture, "Dredging Equipment," Great George Street, S.W.1. 6.30 p.m.

I.R.T.E. (E.M.). A. G. Higgins, "Design and Construction of Routemaster Bus," Mechanics Institute, Nottingham. 7.30 p.m.

Jan. 7.—I.E.E. H. G. Bell, Second Hunter Memorial Lecture, "Protection of Electrical Systems," Savoy Place, W.C.2. 5.30 p.m.

Inst. T. (M'ide). Sir John Nicholson, "Current Shipping Problems," Chamber of Commerce, Liverpool. 6.30 p.m.

W.R.L.D.S. Major-General L. Wansborough-Jones, "The Way Ahead," H.Q. Staff Dining Club, Bishops Bridge Road, W.2. 5.45 p.m.

Inst. T. (L'ster). B. C. Clarke, "The Bus Passenger and the Law," Empire Lounge, Leicester. 7 p.m.

R.C.T.S. (Bristol). W. Wellman, "Operating and Signalling in the Bristol District," Grosvenor Hotel, Bristol. 7.15 p.m.

Jan. 7.—Inst. T. (W.). R. Haddock, "The Dock Labour Scheme," Jocke Office, Bristol. 1.15 p.m.

Riv. C. C. R. Clinker, "The Hay Railway 1810-60," Royal Scottish Corporation, Fetter Lane, E.C.4. 7 p.m.

Jan. 9.—R.C.T.S. (Sx. and Kent). Annual dinner. Regent Restaurant, Brighton. 6.30 for 7 p.m.

Jan. 16-27.—Brussels Motor Show.

Feb. 18-28.—Amsterdam Motor Show.

Mar. 10-20.—Geneva Motor Show.

Apr. 26-29.—Inst. T. 40th Congress. London.

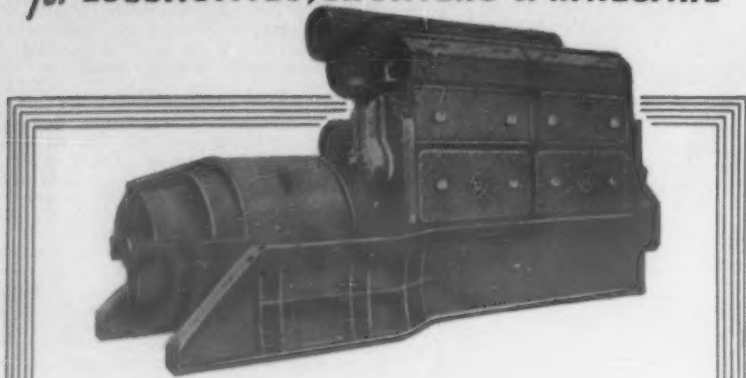
In an endeavour to record the ever-increasing number of meetings of bodies interested in transport a considerable number of abbreviations and contractions is now being used. These are set out below and will be repeated at intervals.

A.E.—Aviation Forum; E.R.S.—Electric Railway Society; I.C.E.—Institution of Civil Engineers; I.E.E.—Institution of Electrical Engineers; I.N.A.—Institution of Naval Architects; I.R.S.E.—Institution of Railway Signal Engineers; I.R.T.E.—Institute of Road Transport Engineers; I.T.A.—Industrial Transport Association; I.Loco.E.—Institution of Locomotive Engineers; I.Mar.E.—Institute of Marine Engineers; I.Mech.E.—Institution of Mechanical Engineers; I.Nav.—Institute of Navigation; Inst.H.E.—Institution of Highway Engineers; Inst.T.—Institute of Transport; Inst.Traf.A.—Institute of Traffic Administration.

L.M.R.L.D.S.—London Midland Region Lecture and Debating Society; L.R.T.L.—Light Railway Transport League; N.T.M.R.C.—Norbury Transport and Model Railway Club; O.S.—Omnibus Society; P.R.D.G.—Peterborough Railway Discussion Group; P.W.I.—Permanent Way Institution; R.Ae.S.—Royal Aeronautical Society; R.C.T.S.—Railway Correspondence and Travel Society; R.S.A.—Royal Society of Arts; Riv.C.—Railway Club; Riv.S.A.—Railway Students Association; S.E.—Society of Engineers; S.L.S.—Stephenson Locomotive Society; S.R.L.D.S.—Southern Region Lecture and Debating Society; S.Wales and Mon.—South Wales and Mon. Railway and Docks Lecture; R.D.L.D.S.—South Wales and Mon. Railway and Docks Lecture and Debating Society; W.R.L.D.S.—Western Region London Lecture and Debating Society.

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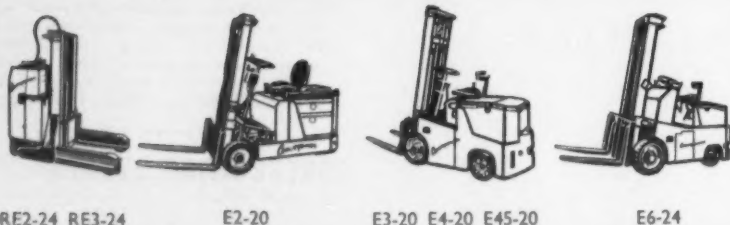
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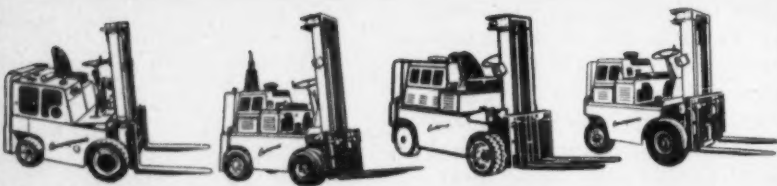
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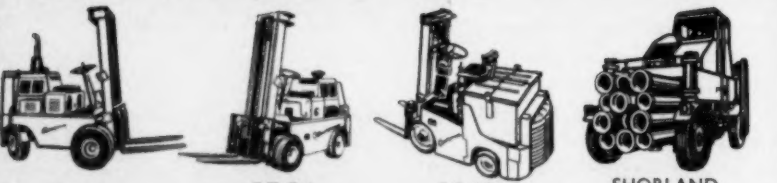


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Great Central Main Line

(Continued from page 3)

the Region's parcels originate in London, Leicester, Nottingham and Manchester, and all these places are directly served by the G.C. route. Not only would the concentration of parcels traffic on the G.C. route enable a better service to be given for this important traffic; it would also enable the traffic to be removed almost entirely from the Midland lines, where present handling arrangements inevitably cause a good deal of interference with the movement of passenger trains and of the passengers themselves. Parcels concentration depots are to be set up at strategic points, including the four centres served by the G.C. line, and from them collection and distribution of all railborne parcels traffic is eventually to be undertaken by road vehicles. Among the many benefits of this scheme would again be quicker and more comfortable travel by the Midland route, as well as, from the railway point of view, better utilisation of both routes.

Conflicting Features

This plan is so logical on paper that it is hard for the impartial onlooker to see why, now that the need for "rationalisation" of the railway system is gradually gaining acceptance from a reluctant public, there should be anything but a purely local outcry against the proposals to change the standard of passenger service on the G.C. line. That this is far from being the case is because the line has a number of unique and conflicting features, some of them perhaps psychological rather than physical. To some extent they cut across the justifications normally advanced for line closures and reductions in service, and many of them tend to cloud the main issue.

The first and probably the most important is that many influential people, in Nottingham and Leicester particularly, have grown up to hold the G.C. line in almost sentimental regard as their own particular way of getting to and from London in comfort, at reasonable speed and with close adherence to the published timetable. As was apparent from the loadings of the trains, not too many people knew how good the service was, and one could be fairly sure of a secluded seat either way. On the Midland line first-class seats are always at a premium at popular times. That this is so suggests that the time advantage on London runs offered by the Midland routes (up to half an hour from Nottingham, 20 minutes from Leicester) remains, despite suggestions to the contrary, the chief attraction for the majority of passengers making these journeys. The majority view will perhaps be more readily acceptable to the very significant minority who habitually travelled by G.C. when actual performance on the Midland lines matches the timetable more closely.

Cutting London Link

Secondly, the present proposals do not involve the closing of the line, as was the case with the M. and G.N. link between the Midlands and East Anglia, which in some respects is comparable. Yet to many G.C. travellers the withdrawal of long-distance expresses, with the facilities such as dining-cars normally associated with these services, amounts to all intents and purposes to closure. Replacement by "semi-fast" trains, however modern the rolling stock, does little to make up for it. Moreover, this is the first time a link with the Metropolis has been weakened. Everyone goes to London at one time or another and so feels entitled to be aggrieved if their method of getting there, however irregularly, is to be altered.

Transport between the East Midlands and London was one of the fields in which the keenest competition arose between the former L.M.S. and L.N.E. companies during the 25 years of their existence. Loyalties established during the inter-war period have survived unchanged into the British Railways era. That this should be so among the staff is, of course, natural and praiseworthy. It is also the case among an important body of passengers, but here it is a frequent source of embarrassment to local British Railways managers. "Daily users of the services to and from Nottingham Victoria... feel concerned at the questionable handling of their passenger train affairs by the London Midland Region management." Such comments from a recent letter in a Nottingham paper, could be matched by equivalent remarks in the Leicester press, and it is typical of correspondence which has been appearing off and on for some years in the newspapers of the East Midlands. The whole plan is seen as a deliberate move by Midland-minded managers, exploiting their new position of authority, to remove a former rival from the field. Argument on these lines extends to the relative merits of various types of former L.N.E. and L.M.S. locomotives. The relevance of this discussion to the railways' present-day problems is remote, but the loyalties remain undiminished.

Regional Boundary Effect

As if to lend emphasis to this supposed conflict between former L.N.E. and L.M.S. interests in the area, the present boundary between the Eastern and London Midland Regions runs through the eastern suburbs of Nottingham. Regional boundaries have to be drawn somewhere, if only for administrative purposes, and will nearly always give rise to some local anomalies and difficulties. Recent railway rearrangements have created a certain amount of redundancy in former L.N.E.R. establishments in the Nottingham area. Special agreements have, in fact, been arrived at through staff and establishment channels so that redundant staff from one side of the border are not debarred, as they normally would be, from taking up local vacancies on the other. Nevertheless, actual or supposed anomalies have not escaped comment in the press in the general context of the G.C. proposals.

It is well known that the G.C. route is shorter than the Midland between Nottingham, Loughborough, Leicester and Rugby. The best trains in pregrouping and in L.N.E.R. days, for instance, ran Leicester to Nottingham, 23½ miles, in 23 min. Such performances, though not in themselves of direct use to many people, are not readily forgotten. The proposed diesel service will retain some of the advantage of the more direct route by covering the distance, with a stop at Loughborough, in half an hour, as against 52 min. by the regular-interval stopping diesel trains on the Midland route.

Cutting Manchester Link

The G.C. line connects at Sheffield Victoria with the Woodhead electrified main line to Manchester. The proposed abandonment of passenger service south of Sheffield appears to deprive this high-capacity line of an important source of through

traffic. We are informed that actual figures of through passengers disprove this. The main purpose of the electrification was the improvement of east-west communication across the Pennines, especially for the heavy flows of Yorkshire coal. Moreover, the G.C. line between Sheffield and Nottingham is seriously affected by colliery subsidence, so that potential speeds could never be attained in practice. The Midland route through the Erewash Valley, though also affected, is not so much involved in future developments in this still expanding coalfield.

Timing and coincidence have played a prominent part in heightening the problem of the partial withdrawal of passenger service on the G.C. line. The announcement of the proposals happens to have coincided with a period of exceptional difficulties on the alternative Midland route; among the more important were the extra engineering works which have been involved in the otherwise unconnected scheme to introduce a diesel service between St. Pancras and Bedford. It has also coincided with the start being made on speeding up the electrification of the Manchester—Euston route. This again would seem to have little relation to the G.C. problem, but it involves the slowing up of some Manchester—London services via Crewe and the diversion of others on to the Midland route to St. Pancras. The idea of including the G.C. as one of the relief routes will undoubtedly have occurred to informed members of the public, though railway authorities are satisfied that the journey times could not be made short enough to be attractive for the throughout journey.

Track Facilities

One of the chief reasons for this is the difficulty of operating a reliable service of fast main-line trains over a common pair of tracks with a dense suburban service in the London area. The four-tracking now being carried out by London Transport between Rickmansworth and Harrow-on-the-Hill would have eased this problem to some extent by providing fast and slow lines over an additional seven miles. There will still remain, however, a double-track section between Amersham and Rickmansworth, now being electrified, over which London Transport proposes to run a very frequent service of local trains. The G.C.'s original alternative route via High Wycombe, which avoids this section, has now become unavailable for diversion. Transfer of the Euston—Birmingham trains to the Paddington—Birmingham route, another move to help speed up the electrification of the Euston main line, has increased the occupation of the line from Paddington through High Wycombe to such an extent that diverted G.C. trains can no longer be accepted, it is claimed.

Backlogs of track and bridge maintenance and renewal from the war and postwar years have still to be made up on the G.C. line. The work entailed in doing this has disrupted the passenger service on the line at weekends for years, but it also seems to the public to go ill with a proposal to reduce the passenger service, whatever may be the intentions with regard to freight. This is especially so as some of the works involved are on a very large scale, such as the renewal of the decking of the bridge carrying the line over the Midland Station in Nottingham, which is now in progress. It is, of course, because British Railways see a very useful, though changed, future for the line that the money is being spent.

Nottingham Stations

Certain other special features concerning Nottingham alone have coloured local opinion about the G.C. line. First is the fact that the Victoria station happens to occupy a more convenient position than the Midland relative to the city centre and to one of its main bus stations. Secondly the station is a more imposing building and appears to be much more spacious and well laid out. The widespread opposition to the closure, for economy reasons, of a subsidiary entrance to the station indicated the high regard in which the station, and the line itself, is held locally. Such opinion is apt to pay scant attention to the usefulness of the installation in the general pattern of present-day railway services. The advantages of the station are simply the embodiment of several decades' additional experience of what a station should be and the facilities it should provide both for the public and for efficient railway operation.

Every policy decision on the smallest aspect of a public service has to take into account numerous conflicting factors. The foregoing review may have served to show that in the deliberations on the future of the G.C. line these factors have been even more numerous and more conflicting than usual in cases of the kind. Nevertheless a decision has had to be reached, and the interests of the comparatively many have had once again to be given precedence over those of the comparatively few. Every move the railways embark on in their present circumstances towards fulfilling their statutory duty to make their services pay hurts somebody, while the long-term advantages are mainly to the community as a whole, and so are more obscure. They are none the less real, and a proper understanding of the reasons behind the decisions should help to bring them sooner to fruition.

The British Standard for steel bearing plates for flat bottom railway rails has been revised as B.S.751:1959 as part of the programme of bringing up-to-date all British standards covering permanent way material.

GOVERNMENT AND ROADS

(Continued from page 5)

pragmatically—almost unconsciously. There are two features of this history that are interesting. One is that the most ancient of conceptions of how roads in this country should be looked after, by public service, is the one that has prevailed. Secondly, the present structure reflects most of the stages of highway control down to the present, from the Government with their ownership of the main arteries and their extensive financial influence which determines what shall be spent and where and when, through the county and county borough councils, which administer most of the remaining roads, through the borough and urban district councils, certain of whom may claim the right to maintain the county roads in their areas, down to the parish council, left, out of all its former powers, only with the duty of lighting its streets.

(To be continued)

From Swansea to the Mumbles

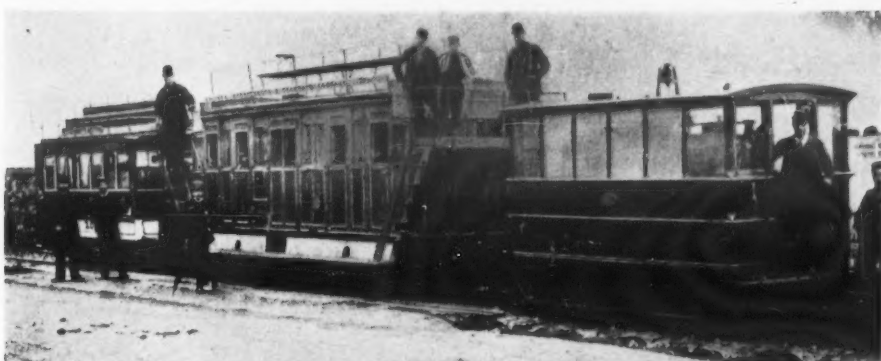
On January 5 the last journey will run on the Swansea and Mumbles Railway, which, as the Oystermouth Railway or Tramroad, was the first railway in the world to carry passengers in 1807. The Mumbles Pier extension was closed after October 11, 1959. South Wales Transport buses will provide the service in future. The historical views reproduced are from *The Swansea and Mumbles Railway* by Charles E. Lee, published by The Oakwood Press.



Seal of the 1804 company



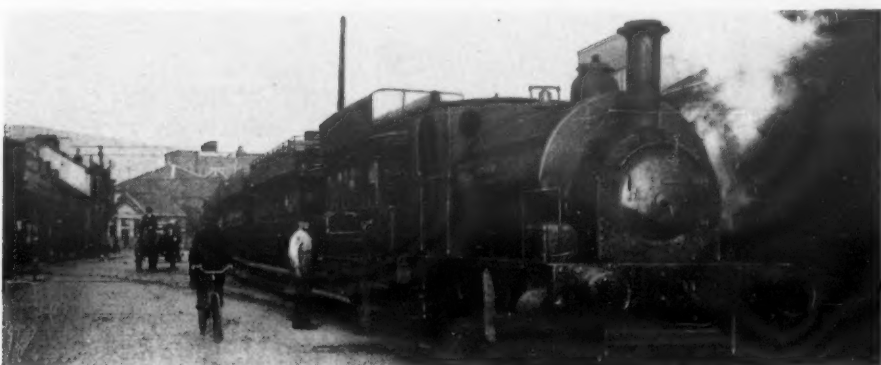
Horse traction at the Dunns, Oystermouth, about 1865



Hughes patent steam tramway locomotive on the Swansea and Mumbles in 1877; it was built at Falcon Engine Works, Loughborough



Brush electric accumulator car, with two-class accommodation for 99, used under B.E.T. auspices in 1902 and 1903



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Super-tractor shovel shifting rocky overburden (Photograph by courtesy of Michigan (Great Britain) Limited)

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RADIAL-FLOW TURBOCHARGERS

Application to Road Transport Vehicles

IN a paper for presentation to various area meetings of the Institute of Road Transport Engineers during the current winter session, Mr. E. Kellett, manager, turbocharger department, C.A.V., Limited, discusses the design of the radial-flow type of exhaust-gas turbocharger and its application to the diesel engines of commercial goods and passenger vehicles. Results of extensive experimental work are produced to indicate the substantial economic benefits to transport operators who adopt turbocharging, the limitations of the turbocharger are shown and methods of selecting the most suitable engine for a given service are suggested.

History Traced

The author traces the history of turbocharging from the first known experiments of Buchi in 1911 and through the period of intensive development and application to the larger marine, industrial and rail-traction diesel engines, which started in 1923. The smallest of the type of turbocharger that had come into common use by the 1930s, which invariably had an axial-flow turbine and centrifugal compressor, weighed over 200 lb. for use with an engine delivering about 300 h.p. and was obviously unsuitable in weight, cost and size for automotive engines. These earlier designs were limited by the heat-resisting material available for the turbines.

Advances in materials and developments in production processes, particularly in investment casting, and an upsurge in interest in the turbocharging of automotive engines brought about a completely new conception of small turbines, which resulted in the evolution of the radial-flow turbine, produced by the investment casting method. The success of aircraft gas turbines suggested the possibility of developing small industrial and automotive units and, despite the theoretically predicted adverse scale effect on turbine and compressor efficiencies, this had not been experienced in practice; in the smallest turbocharged compressor efficiencies of 80 per cent were normal and turbine efficiencies even higher.

Operators' Cautious Approach

The application of turbocharging had been viewed with caution by many vehicle operators and among the reasons advanced by Mr. Kellett for this was that in the past supercharging had been thought to be a means of obtaining more power than that for which the engine had been designed and for only limited periods. Another reason was operators' experience with engine-driven compressors, where the gains in low-speed torque were outweighed by the parasitic effect on fuel consumption at higher speeds.

The testing of automotive engines designed for natural aspiration with various degrees of turbocharging had indicated that its proper application to these engines could be beneficial. A large number of automotive engines had been run for extended periods at a turbocharger pressure ratio of two atmospheres. Apart from weaknesses in cylinder-head gaskets, which could be resolved, no evidence had been found to indicate that these conditions were likely to affect their life. Evidence had rather shown the contrary.

Design Limitations

Bearings were a criterion in the degree of pressure charging acceptable and there might be other design limitations. Wear of cylinder liners and piston rings might increase with higher maximum pressures but developments in materials would allow a limited increase, probably in excess of that arising from a 2 to 1 charge air pressure ratio. Piston or exhaust-valve temperatures were a limiting factor on some engines but as the increased charge contained a proportionate amount of excess nitrogen, the combustion temperature would still depend on fuel-air ratio. Maximum temperatures normally occurred at high engine speeds, when the turbocharger tended to deliver a higher proportion of air.

Of the effects of turbocharging on the cooling system the author says that where turbocharged engines had replaced naturally aspirated ones in road vehicles it had never been necessary to alter radiator size. The amount of fuel heat passed to the coolant depended on the fuel-air ratio at maximum fuelling conditions and with turbocharged engines there might be excess air at high engine speed. For a given horsepower throughput the percentage fuel heat to coolant of the turbocharged engine was less than the naturally aspirated engine by about 8 per cent. With an engine specifically designed for turbocharging it was unlikely that there would be excess air at any speed and the radiator would need to be matched accordingly.

Charge Cooling Advantages

The advantages of charge cooling were very worthwhile, both for engine and turbocharger. The turbocharger could deliver 30 per cent more air; the engine benefited in internal cooling arising from the lower charge temperature. For vehicle applications a practical way of charge cooling was by means of an air-to-air radiator mounted in front of the normal water radiator. A cooler so installed would have limitations but would meet most of the requirements of the automotive engine. The combination of turbocharger and intercooler gave a very flexible power unit and by careful choice of cooler size and turbocharger pressure ratio, an optimum torque curve could be achieved and limitations of engine and turbocharger design avoided.

The turbocharged engine, compared with a naturally aspirated engine of similar power, continues Mr. Kellett, gave its greater gains in specific

fuel consumption at low powers and speeds. The gains could be adjusted to suit operating conditions by careful choice of engine size and the degree of turbocharging applied. A simple change from an unblown to an equivalent turbocharged engine of 2 to 1 pressure ratio would give a gain of at least 10 per cent; with careful choice of engine and matching of turbocharger to meet the precise operating conditions, the gain could be at least 12 per cent.

These facts indicated that the operator must adopt a new approach when ordering new vehicles and the vehicle manufacturer must provide test vehicles to assess properly the requirements of his customers. Test vehicles must be equipped with instrumentation to record the variables of the engine over its normal operating route. From the statistics produced, engine and turbocharger combinations and the transmission ratios likely to give the best fuel economy at the required performance could be selected.

In Public Service Vehicles

Applying turbochargers to existing engines to give improvements in power output and a measure of fuel economy without jeopardising engine life was a real and practical proposition. Though in many cases worthwhile, this use of turbocharging did not exploit its possibilities to the full but engines were now becoming available which would meet the power requirements of road vehicles and have turbocharging properly applied. Public service vehicles had hitherto used engines of about 100 h.p. for less hilly routes and 130 h.p. for more hilly ones. It had been shown that by turbocharging the 100-h.p. engine up to the performance of the 130-h.p. unit and using the vehicle on the more hilly routes, a fuel saving of 12 per cent was made and the vehicle had a livelier performance. This degree of turbocharging was a moderate one and the life of the unit under those conditions should be satisfactory.

The paper says that the more popular power of about 100 h.p., now met by unblown engines of between 8 and 9 litres, could be provided by turbocharged units of between 6 and 7 litres. Naturally aspirated engines of this size of sufficiently robust form to meet requirements of p.s.v. operators were not available. Engine makers were most likely to reduce the capacity of existing engines, which would enable them to meet a wider application with and without turbocharging. One manufacturer previously making engines of about 8½ and 10½ litres capacity was now offering one of 7 litres capacity in the 8½-litre frame, which provided a horsepower range from 80 to 150 and any intermediate power. Air charge cooling was likely to extend the range of powers available from a single frame size, but the acceptability of air radiators in vehicles could not be assessed until considerable road testing had been undertaken, stated the author.

Servicing

The only parts of a turbocharger subject to wear were the bearings, which if properly assembled and fed with clean oil were theoretically capable of 10,000 hours running. The compressor rotor would always lose some efficiency through being fouled by atmospheric dirt, even with a good air cleaner. It was unlikely that frequent cleaning of the rotor would be necessary, although some efficiency might be regained by cleaning at major engine overhaul periods. This was a straightforward operation and could be carried out if necessary with the turbocharger in position. The turbine was self-cleaning, but if the engine was allowed to idle for long periods a short run at full rack was recommended to shed any carbon build-up. It was a simple matter to check the turbocharger for satisfactory operation by measuring the charge pressure at the intake manifold. If a turbocharger failed the engine would usually continue to run, though there would be loss of power and an increase in exhaust smoke and noise. Rotors were unlikely to fracture.

Mr. Kellett concludes that the type of turbocharger developed for automotive engines showed so great an advantage over established axial-flow machines that it was likely to set the pattern for future turbochargers up to very large sizes. A torque curve corresponding in shape to that obtained from an unblown engine but of a higher order could be achieved and, irrespective of increased power considerations, a turbocharger was a worthwhile addition to an existing engine. Such engines were not likely to have their lives shortened by turbocharging at 2 to 1 pressure ratio; in some cases an improvement in service life could be expected.

The savings in fuel at the present price for a vehicle doing 1,000 miles a week at 8 m.p.g. would be £100 a year, when the engine was properly matched for the service required. It would be beneficial to the operator if the chassis manufacturer would supply engine and turbocharger combinations best fitted for specific services. Operators must overcome their caution and appreciate that turbocharging was a logical step in the thermodynamic development of the diesel engine rather than a supercharging device to obtain high but short-lived power. Many turbocharged vehicles had been in service for a year or more, suffering only minor faults, substantiating all the claims of performance and fuel economy made for them.

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green arrow to be sure**ROTARY-PISTON ENGINE****Promising N.S.U.-Wankel Design**

FURTHER details have now been released of the N.S.U.-Wankel rotary-piston engine, to which reference was made in our issue dated December 19. Work on the design began in 1951, when the German company, N.S.U. Werke, began collaborating with its originator, Mr. Felix Wankel, a specialist in sealing and the design of rotary valves, who had previously been working at the German Aeronautical Research Establishment for about 10 years. During the past 12 months, contribution to the development of the N.S.U.-Wankel engine has been made by the Curtiss-Wright Corporation, which has acquired the American licence.

Recent reports from both the N.S.U. and Curtiss-Wright concerns indicate that a stage has been reached in the development where reasonably early

rotor rubbing speeds are kept reasonably low even at high shaft speeds, but it also means that work will need to be done in developing suitable transmissions before the new engine can replace conventional multi-cylinder units in road vehicles. Much will depend on the flexibility of the unit and relative efficiencies over a wide speed range and perhaps on whether two or more chambers can be coupled end-on to provide a greater number of power impulses per shaft revolution.

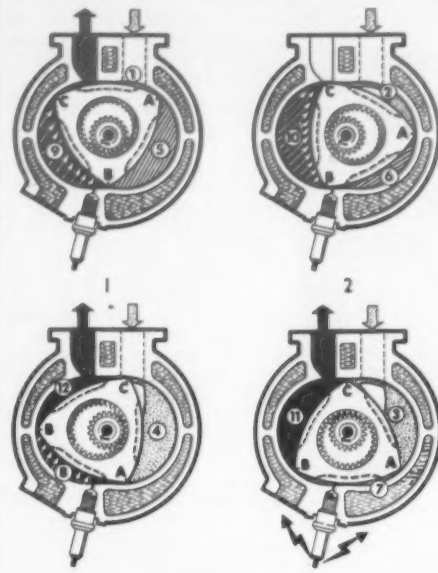
Potential Advantages

Some potential advantages of the N.S.U.-Wankel engine are great simplicity through elimination of a multiplicity of working parts, low specific weight and bulk and the raising of speed, and hence power output, limitations through the elimination of reciprocating masses. The engine is entirely without valves, valve springs and valve-operating mechanisms and the rotor is balanced by a balancing mass fitted to the output shaft. The shape of the chamber has been determined by mathematical analysis, which has facilitated the development of suitable machines for grinding the bore.

The basic rotary-piston principle developed by Wankel was first used in the form of a compressor for the 50-cc. N.S.U. two-stroke engine, with which motor-cycle speed records were established at Utah in 1956. The Wankel supercharger enabled this tiny engine to produce 13 b.h.p., equivalent to 260 b.h.p. per litre. This was followed in 1957 by a prototype rotary-piston engine of 125 cc. total chamber volume, which after some refinement of the sealing and cooling system was developed to produce 29 b.h.p. at 17,000 (shaft) r.p.m. This early unit had a b.m.e.p. exceeding 130 p.s.i. and a specific petrol consumption of 230 grammes (about 0.5 lb.) per b.h.p.-hr. Full-load performance at speeds down to 1,670 r.p.m. is said to have been satisfactory.

The earlier engine had both rotor and casing revolving about the shaft, but the simplified current design removes the need for rotation of the casing through the use of the eccentric rotor bearings, which have the effect of counter-rotating the rotor in relation to its normal forward movement. Both 125-cc. and 250-cc. engines of the new simplified design were being tested by 1958. The design is simple and compact in the extreme and avoids the major drawbacks of other uncomplicated heat engines. The complete 125-cc. engine weighs only 37½ lb. in cast iron and steel and 24½ lb. in light alloy.

Providing efficient gas sealing, which does not deteriorate too rapidly in use, can be reproduced in production engines and satisfactory means of coupling the unit with contemporary transmission systems are developed, the N.S.U.-Wankel engine comes the nearest yet to threatening the 80-year entrenchment of the Otto-cycle engine as a universal power source.



1-4 INDUCTION 5-7 COMPRESSION 8-10 COMBUSTION 11-1 EXHAUST
Schematic arrangement of the N.S.U.-Wankel rotary-piston engine, which shows how, reading the four diagrams in clockwise sequence, the eccentric motion of the rotary piston provides four-stroke operation

production can be forecast with some confidence, of lower-powered units in sizes suitable for motor cycles, cars and so on by the German company and of higher-powered units with potential marine, industrial, rail-traction and aircraft applications by the American company. Although development of the basic power unit is well advanced and a good deal of applicational development has been undertaken in the laboratory, it is admitted that much practical work and testing remains to be done in applying the new engine in automotive roles.

Constructional Details

Reference to the illustration will show that the N.S.U.-Wankel engine consists basically of a water-cooled casing, having an inner face in the form of an epitrochoid, in which operates a rotary piston in the shape of an equilateral triangle with arched sides. The rotor is geared to a shaft concentric with the casing. End plates make a gas-tight fit against the end faces of the rotor and also carry inlet and exhaust ports and the sparking plug. As the rotor turns its apices, which are fitted with special sealing and bearing strips, are kept in continuous contact with the inside surface of the casing, providing a gas-tight seal between the three spaces formed in the chamber.

Taking any one of the three spaces, it will be seen that as the rotor turns the space grows and diminishes in volume and makes two complete volume cycles each revolution of the rotor. By suitably arranging inlet and outlet ports controlled by the rotor itself, the engine can be made to breathe in similar manner to a four-stroke piston-cylinder arrangement. Addition of carburettor and ignition system provides an engine working on a true four-stroke cycle, which with a three-sided rotor produces three power impulses per rotor revolution.

The combination of gear ratio between the shaft and annular rotor gears and the eccentric path of the rotor constrained by the shape of the chamber results in an actual turning ratio of shaft to rotor of 3 to 1; thus there is only one power impulse per revolution of output shaft, compared with three power impulses per revolution of a normal six-cylinder four-stroke engine. This means that

DONEGAL DEVELOPMENTS

(Continued from page 7)

morning mail run to Glenties and Portnoo in place of a notably money-losing bus journey.

When it is appreciated that the C.D.R. has been moving some 48,000 tons of freight and 229,000 passengers annually by train, it will be seen that some strengthening of resources is needed to cope with the traffic diverted to the roads, since existing vehicles are so fully employed. As already mentioned six single-deck buses are being hired from Coras Iompair Eireann and a similar policy is being followed so far as freight vehicles are concerned. The number of units to be borrowed is 12, comprising three 10-ton Leyland Comet tractor units, three semi-trailers with pantechon bodies and six platform semi-trailers. With two Super Comets already delivered and a Beaver which is on order these vehicles will cover railway replacement.

The future of the staff must present the management with some awkward problems but it is expected that the changeover will be completed without much dislocation. So far as physical assets are concerned, there have been inquiries for the purchase of railway rolling stock and other equipment, mostly from across the Atlantic, whither some Irish railway relics have already gone. By and large there are not many places where the track could be used for highway improvement since it does not follow the road as closely as did the line from Galway to Clifden, for example. The buildings at the Stranorlar headquarters are mostly adaptable to handling the road fleet and they will, indeed, help to relieve pressure on what has been available up to now. Road vehicle maintenance men have been carrying out remarkable work in the space available. There will be some regret among the older members of the staff at the change, but they have already demonstrated their versatility which should serve the system well.

OFFICIAL NOTICES**RED AND WHITE SERVICES, LIMITED**
GENERAL MANAGER

A GENERAL Manager will be required from April 1, 1960, by this Company which operates approximately 450 public service vehicles from headquarters in Chepstow.

Applicants should have had extensive experience in passenger road transport operations. There is a contributory pension scheme.

Applications, setting out full details of age, present position, experience and indicating salary expected, to be submitted before January 15, 1960, marked "Private and Confidential" and addressed to the Chairman, Tilling Group Management Board, 10 Fleet Street, London, E.C.4.

EAST AFRICAN RAILWAYS AND HARBOURS
ADMINISTRATION**ASSISTANT TELEGRAPH ENGINEER**

SALARY £1,170-£1,755. Free passages. Furnished quarters provided. Generous leave. The successful candidate could be appointed on pensionable terms or on contract/gratuity terms for one tour of service or on secondment if on the staff of British Railways.

Candidates, 25-45 years, must be A.M.I.R.S.E. and have thorough experience of telecommunication

systems associated with railways and be capable of designing, estimating and controlling the maintenance organisation. Knowledge of mechanical and power signalling systems and radio systems an advantage.

Write Director of Recruitment, Colonial Office, London, S.W.1, giving full names, age, qualifications and experience, quoting BCD. 173/053/D16.

THE RHONDDA TRANSPORT CO., LIMITED**VACANCY FOR SECRETARY/ACCOUNTANT**

THE Rhondda Transport Co., Limited, invites applications from suitably qualified men with sound practical knowledge of taxation, for the position of Secretary/Accountant. The Company operates some 200 public service vehicles in South Wales, and its Head Office is at Port. The starting salary will depend on the qualifications and experience of the successful candidate, and the appointment will carry membership of a contributory pension scheme.

Applications (which will be treated in strict confidence), stating age, education, qualifications and present salary, and giving full particulars of present and previous employment, should be sent under "Private" cover to The Chairman, Rhondda Transport Co., Limited, Stratton House, Piccadilly, London, W.1, to arrive not later than Thursday, January 14, 1960.

SOCIAL AND PERSONAL

B.T.C. Docks Board

THE board of management for British Transport Docks has been reconstituted with effect from January 1, when Mr. W. Mackenzie, B.Sc., M.I.C.E., retired. Sir Robert Letch remains chairman of the board and general manager of British Transport Docks. Other members of the board are Messrs. T. L. Davies, chief financial officer, British Transport Docks; S. A. Finnis, chief docks manager, Southampton; W. Jeffers, chief docks manager, South Wales; and T. S. Roberts, chief docks manager, Hull. Mr. J. Taylor Thompson, M.C., M.I.C.E., J.P., formerly chief civil engineer of the London Midland Region of British Railways, has agreed to serve as a part-time member of the board.

The 38th annual conference of the Scottish Road Passenger Transport Association will be held at the Turnberry Hotel, Ayrshire, from Tuesday, April 19, to Friday, April 22. A paper will be read on April 20 by Mr. R. W. Adams, chief engineer, Belfast Corporation Transport Department, "The way of a road passenger transport operator in a city."

Mr. G. E. Woodhead, M.I.C.E., A.M.I.Struct.E., district engineer, Derby South, London Midland Region, B.R., who has been appointed district engineer, Manchester, was educated at Watford Grammar School and St. Paul's School, London. He joined the London Midland and Scottish Railway as a draughtsman, in the district engineer's office, Watford, in 1926.



Mr. G. E. Woodhead

Under the district engineer, Mr. Woodhead was responsible for the extensive alterations and modernisation of Camden motive power and goods depots. In 1936 he transferred to the chief civil engineer's office, St. Pancras, and in 1940 became resident bridge engineer, Manchester. During the 1939-45 war he was responsible for extensive repairs of air-raid damage to railway installations in Manchester, Birmingham and Liverpool, and for certain work in Coventry, Nottingham and Derby. He also carried out special strengthening of bridges on cross-country lines. After the war Mr. Woodhead became assistant district engineer, Derby South, also acting as district engineer, Nottingham, until 1951, when he was made works maintenance assistant, chief engineer's office, Euston. He held the position for three years, and for considerable periods also carried out the duties of assistant engineer for works maintenance until appointed district engineer at Derby in 1954. Mr. Woodhead is a fellow of the Permanent Way Institution.

Mr. A. Cameron, M.I.R.T.E., a vehicle examiner with the Ministry of Transport in Glasgow, has been elected to the council of the Institute of The Motor Industry.

Having reached the statutory age limit, Mr. H. O. Ernst retired as general manager of the Swiss National Tourist Office and the Swiss Federal Railways in London on December 31. His successor is Mr. Albert Kunz.

The annual award of the British Electric Traction Co., Limited, for a member of the staff of its associated companies obtaining the highest aggregate marks in the Royal Society of Arts examinations for the diploma in road transport subjects was presented at a luncheon at the Royal Star Hotel, Maidstone, to Mr. Harold W. Smith, senior traffic assistant of Maidstone and District Motor Services, Limited. The presentation was made, in the absence owing to illness of the Mayor of Maidstone, by the Deputy Mayor (Councillor W. G. Sherman). Mr. R. P. Beddow, chairman of M. and D., said his pleasure in presiding at the function was enhanced by the fact that he was chairman of the company to which the winner, Mr. Smith, belonged. M. and D. had amongst its staff both those who had given their spare time to teaching in the field of further education and others who had distinguished themselves in professional examinations of various types. Mr. Smith had added further lustre to the impressive record of successes held by past and present members of the staff. Mr. R. W. Birch, outlining the work of the National Committee on Road Transport Education, with particular reference to the R.S.A. syllabus, said that it was on occasions such as the present one that those who devoted their time to the worthwhile cause of road transport education felt most gratified. The numbers competing and the results obtained in the examinations year after year showed that the industry continued to attract the right material and of this Mr. Smith was a fine example. R.S.A. road transport diplomas were presented to two other members of the Maidstone and District staff, Mr. J. F. Adamson and Mr. A. D. Sutton.



Presentation of B.E.T. award to Mr. H. W. Smith, of Maidstone and District Motor Services, Limited (see accompanying paragraph)

Left to right: Messrs. A. J. White (general manager, Maidstone and District); F. A. Wheeler (examinations officer, Royal Society of Arts); R. W. Wilson (principal, Maidstone Technical College); the Deputy Mayor of Maidstone (Councillor W. G. Sherman); R. P. Beddow (chairman, Maidstone and District); H. W. Smith; A. W. Peacock (divisional education officer, Kent Education Committee); and R. W. Birch (chairman, the National Committee on Road Transport Education)

The death is announced of a former assistant works manager of Crewe locomotive works, Mr. G. R. S. Darroch. He was 79 and author of *Deeds of a Great Railway*, which told the history of the London and North Western Railway during the 1914-18 war.

We record with regret the death of Mr. S. Carlisle, formerly general manager, Belfast Corporation Transport Department. He was 80. Mr. Carlisle was general manager from 1923 to 1928 and deputised or acted in that capacity on two subsequent occasions, the second being during the 1939-45 war.

Mr. A. Yeaman has assumed control of the northern traffic division of the Scottish Region with effect from January 1. This is the first major step in the implementation of the new traffic organisation whereby operating, commercial and motive power responsibility is being decentralised and greater authority given to traffic managers on the spot. The northern traffic division will be comprised of the Perth and Inverness railway districts, which will include Oban, Mallaig and Kyle of Lochalsh.

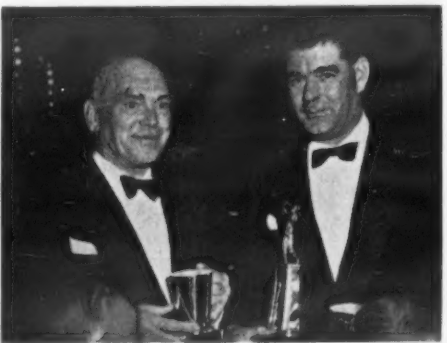
As already recorded in these columns, Mr. M. Harbottle has been appointed district engineer, Derby South, London Midland Region, B.R. He joined the former L.M.S.R. in 1926 at Glasgow as an apprentice, in 1930 he became junior assistant, new works department in the divisional engineer's office, Glasgow, and in 1934 resident engineer on the Ayr Harbour South Pier reconstruction.



Mr. M. Harbottle

In 1937 he was appointed assistant to the district engineer, Chester, in charge of the Shropshire Union Canal. Transferred to Liverpool in 1943 as works assistant to the district engineer, he returned to Scotland in 1945 on appointment as assistant district engineer, Inverness. In 1946 he was appointed assistant district engineer, Perth. He became district engineer at Inverness in January, 1958, the post he left for his present appointment.

In his 40th year of service with the Vacuum Brake Co., Limited, Mr. A. S. King has retired from his position as executive director of the company. His success in promoting sales of V.B. equipment brought his promotion to assistant sales manager in 1942, and sales manager the following year. He was appointed to the board of the company in 1952. Vacuum Brake was absorbed into the Birfield group of companies in 1954, and Mr. King remained as executive director.



Mr. J. Henderson (Permutit, Limited) and Mr. J. S. Lees (Leyland Motors, Limited), winners of the president's prize, with their trophies at the Transport Golfing Society dinner

The Scottish Area Board has appointed Mr. J. J. Finlayson, at present mechanical engineer (general) at B.T.C. headquarters, as chief mechanical and electrical engineer, Scottish Region, B.R. This appointment arises from the Commission's technical organisation policy to combine under one officer the present mechanical and electrical engineering and carriage and wagon engineering departments.

All seventeen members of the Northern Ireland Road Traffic Advisory Council have resigned. In a statement issued in Belfast they complain that though they have made many suggestions about traffic problems "nothing more was heard of them and nearly all remained a dead letter." The Council was appointed in 1956, as a concomitant of the Road Traffic Act (Northern Ireland) 1955. Mr. Brian Faulkner, the Minister of Home Affairs, has accepted the resignations.



Co-operating in British Railways 50 cycle 25 kV Electrification

The multiple-unit trains built by British Railways at York and Doncaster have been in service on the COLCHESTER-CLACTON-WALTON Electrified section of the Eastern Region since April, 1959. They are fitted with

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India—Saxby & Farmer (India) Private Ltd., Calcutta

Australia—Westinghouse Brake (Australasia) Pty. Ltd., Concord West, N.S.W.

South Africa—Westinghouse Brake & Signal Co. S.A. (Pty.) Ltd., Johannesburg

Agents:—Bellamy & Lambie, Johannesburg

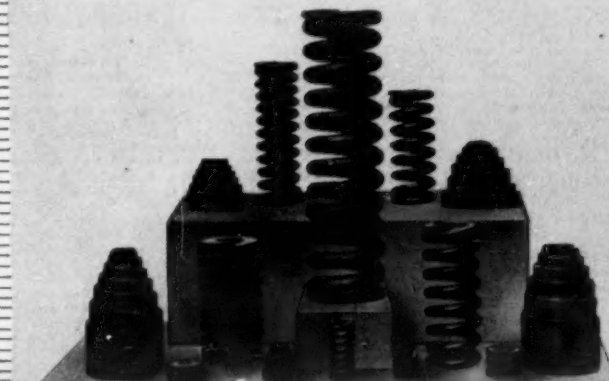
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IMPORTANT CONTRACTS

Worldmasters for Ghana

AS a major step in the development of its public transport services, the Government of Ghana has placed a contract valued at over £900,000 with Leyland Motors, Limited, for 150 high-capacity buses and spares. The order is for underfloor-engined single-deck Worldmaster chassis, the most successful export bus that the company has produced. A fleet of these buses is already operating in Accra, capital of Ghana, where they have given excellent service. The new buses will have 46-seat Metropolitan-Cammell-Weymann bodies with a large unobstructed floor area for standing passengers. They will operate in four main centres, at Accra, Kumasi, Takoradi-Sekondi and Cape Coast, and some will also be used for extending existing routes and establishing urban services. A depot is to be established by Leyland Motors, Limited, in Accra with facilities for chassis assembly and the storage of spare parts and units. It will also house a school for the training and instruction of Ghanaian mechanics.

South Wales Docks Contracts

The British Transport Commission (South Wales Docks) has placed the following contracts:

Stothert and Pitt, Limited, for the supply and erection of nine electric cranes for No. 4 Quay, King's Dock, Swansea.
J. L. Kier and Co. (London), Limited, for extension of transit shed, Queen Alexandra Dock, Cardiff.
Andrew Scott (Civil Engineers), Limited, for construction of hydraulic pumping station and electrical substation, King's Dock, Swansea.

Scottish Region Contracts

The following contracts have been placed by the Scottish Region of British Railways:

Kinnear, Moodie and Co., Limited, Glasgow, for maintenance work at car-ferry berth, Stranraer Harbour, and renewal work on overbridge, Craig Street, Airdrie.
Westinghouse Brake and Signal Co., Limited, London, for barriers at Blackford level crossing.
W. MacLellan, Limited, Glasgow, for reconstruction of bridge, Grant Street, Helensburgh.

Good Start to B.M.C. Year

Ensuring that the present high rate of British vehicle exports is maintained in the New Year, nearly 16,000 B.M.C. vehicles or knocked-down units were at sea over the Christmas holiday period, carried in some 300 different ships and bound for the United States, Canada, Australia, South Africa, New Zealand, Hong Kong, West Indies, South America and Northern Europe.

Southern Region Contracts

The Southern Region of British Railways has placed the following contracts:

Taylor Woodrow Construction, Limited, Southall, for construction of oil fuelling station at Bricklayers Arms.
W. H. Gaze and Sons, Limited, London, S.W.18, for new car park at Brookwood Station.
The Cement Gun Co., Limited, Hagworth, for repairs to concrete piles at Portsmouth Harbour.
Aubrey Watson, Limited, Henley-on-Thames, for reconstruction of bridge at Chard Junction.
W. R. Payne and Sons, Limited, Westcliff-on-Sea, for repairs and renovations to Gravesend Town Pier pontoon.

B.P. Orders £250,000 Computer

An electronic computing system has been ordered by the British Petroleum Co., Limited, from Ferranti, Limited. Costing over £250,000, the system will be based on the Ferranti Mercury computer, which is stated to be the fastest machine of its type at present manufactured in Europe. The new equipment is to be installed in one of B.P.'s head-office buildings in London; it is planned to use it for data processing in connection with a range of the company's operations in both the commercial and scientific fields.

St. Lawrence Seaway Construction

Six contracts totalling over \$3 million in value have been awarded to Canadian firms by the St. Lawrence Seaway Authority for the construction of extensions to entrance walls in the Welland Canal. The work will add 6,000 ft. of tie-up walls for ships using the Welland Canal. The three firms, all of Toronto, are Carter Construction, McNamara Marine and C. A. Pitts, and work is due for completion by April 20 next. Sawn timber and spruce piling to be used by the general contractors will be supplied by MacMillan and Bloedel, Quebec, and Great Lakes Lumber and Shipping, Fort William.

Pyrene Marine Fire Protection

A Pyrene combined smoke detecting and CO₂ fire extinguishing installation has recently been installed on board the M.V. *Macindoe*, owned by Clan Line Steamers, Limited. The installation, which incorporates a total of 86 80-lb. capacity CO₂ cylinders, protects the vessel's engine room and boiler flat as well as the 18 cargo spaces. A multiple-point smoke detecting cabinet is fitted in the CO₂ cylinder room, from which a pipe is led to a fabricated console in the ship's wheelhouse containing a Pyrene single-point visual smoke-detection unit with audible smoke alarms, the latter being repeated from the multiple-point cabinet in the CO₂ cylinder room.

New Eastern Region Contracts

The Eastern Region of British Railways announces the following contracts:

Brush Electrical Engineering Co., Limited, Loughborough, for supply and installation of rotary frequency converter sets, standby diesel generator set, e.h.v. and m.v. cables, switchgear and transformers for use with signalling systems between Gas Factory Junction, Barking and Upminster.
Johnson and Phillips, Limited, London, S.E.7, for supply and installation of e.h.v. and m.v. switchgear, transformers and cables for substations A and B at Colchester.
Herbert Morris, Limited, Loughborough, for one 50-ton fixed electric Goliath crane with 10-ton auxiliary lift and lifting beam for Southminster goods depot, and two 45-ton electric overhead travelling cranes at Doncaster locomotive works.
South Wales Switchgear, Limited, Blackwood, for erection of equipment for 6.25kV. feeder stations and track sectioning cabins for 30-cycle a.c. electrification and other miscellaneous small wiring in buildings, in connection with London, Tilbury and Southend Line electrification.

Diesel Servicing at Hitchin

Work will shortly commence on a new scheme to provide for the day-to-day servicing of diesel locomotives at Hitchin. The Eastern Region of British Railways said the project is being carried out in connection with the changeover from steam to diesel operation on the suburban and Great Northern main-line services into Kings Cross. The new Hitchin depot will be used for the fuelling and servicing of 13 main-line diesel locomotives and six diesel shunters. It will be sited near the disused goods shed of the former Midland Railway. The existing steam locomotive shed cannot be converted because the site is needed for the future enlargement of the station itself. The work will be carried out by George Wimpey and Co., Limited, and the new shed is expected to be in use by next spring. Although they will be serviced at Hitchin, the locomotives concerned will receive periodical maintenance and inspection at the new shed at Finsbury Park (Clarence Yard), which will also be in use in February or March, 1960.

SHIPPING and SHIPBUILDING

Glasgow—Cork Service Withdrawn

FROM January 16 the Clyde Shipping Co., Limited, is to withdraw its coastal cargo service between Glasgow and Cork, via Dublin and Waterford. Rising labour costs are the main reason for the discontinuance of this 104-year-old service. Butter and egg traffic has practically disappeared and no livestock was carried during the past year.

Germany to Build 87,500-Ton Tankers

THE Howaldtswerke yard at Kiel has received an order from the Naess Shipping Co., Incorporated, of New York, for two tankers of 87,000 tons deadweight each, for delivery before the end of 1964. They are the largest vessels yet ordered from a German yard.

U.S. Container Ships

CONSTRUCTION of its first container ship was commenced at Baltimore at the Fairfield yard of the Maryland Shipbuilding and Drydock Company recently. A double keel-laying ceremony was held to mark the beginning of construction of two such vessels for Container Ships, Incorporated. They will carry 2,100 short tons of cargo in 170 lightweight containers and 50 motor vehicles as deck cargo.

£20 Million Loan for Suez Canal

AFTER nine months of discussion the World Bank has agreed to loan about £20,180,000 to the Egyptian Suez Canal Authority to enable the canal to be deepened, widened and generally improved. By 1961 the maximum permitted draught should be 37 ft. instead of 35 ft., an increase from 36,000 to 46,000 in terms of deadweight tons. The United Arab Republic has adhered to its refusal to allow the passage of ships bound to or from Israel.

Kyle of Lochalsh Ferry

A PRACTICAL step in the encouragement of tourism in the Highlands has been taken by the Caledonian Steam Packet Co., Limited, in the placing of an order for an additional ferry vessel to operate on the Kyle of Lochalsh—Kyleakin ferry service. The new ferry, which will be similar to the present *Lochalsh*, with a capacity for passengers and six cars, will bring the fleet of vessels up to four and will enable full use to be made of the improved berthing facilities to be provided to Kyle of Lochalsh and Kyleakin. It is intended that the ferry shall be ready for next summer traffic.

Union Castle Liner in New Guise

FORMER Union Castle liner *Dunnottar Castle*, which was on the England—South Africa run for more than 20 years, has been given a spectacular face-lift in nine months at the Wilton-Fijenoord shipyards at Schiedam, in the Netherlands. Her tonnage has been increased from 15,000 to 20,000 gross tons, her speed from 15 to 18 knots and her power from 9,400 to 17,000 h.p. On December 26 she was delivered—renamed the *Victoria*—to the Italian-owner Incres Steamship Co., Limited, of Monrovia, Liberia, and her maiden voyage was to begin on December 27 from Le Havre. Carrying 600 passengers, she will be used for tourist cruises.

M.o.T. Secretary Visits Yards

LORD CHESHAM, Joint Parliamentary Secretary to the Ministry of Transport, this week visited shipyards on the North-East coast. He spent Monday on the Tyne, Tuesday on Wearside and Wednesday on the Tees. In the course of his visit he took the opportunity of having a meeting with representatives of shipyard employees' unions. Lord Chesham had originally planned to make this tour a month later at the time of the annual dinner of the North-East Coast Institution of Engineers and Shipbuilders, which he is attending. But he went earlier at the particular request of the Minister, Mr. Ernest Marples, to whom he will report his impressions on his return.

More Flag Discrimination

A RECENT Brazilian decree, making it plain that it was the Government's intention that 70 per cent of Brazilian imports should be carried in Brazilian flag ships or in ships chartered by Brazilian companies under Government authority, was discussed by the O.E.E.C. Maritime Transport Committee at a meeting in Paris. The committee considered the Brazilian action to be a deplorable interference with normal commercial procedures and to inflict grave damage on international shipping and trade.

Following its consideration of this particularly flagrant case, the committee had a general discussion on flag discrimination. It is increasingly alarmed at the spread of discriminatory practices throughout the world, and will consider at further meetings what new measures to combat this menace can be recommended to governments. In the particular case of Brazil, the committee agreed to recommend that the Governments represented should follow up the previous protests and should consider what further action could appropriately be taken.

TENDERS INVITED

THE following items are extracted from the Board of Trade Special Register Service of Information. Inquiries should be addressed, quoting reference number where given, to the Export Services Branch, Board of Trade, Lacon House, Theobalds Road, London, W.C.1.

January 7—India.—Neyveli Lignite Corporation for unspecified number of 210-b.h.p. DIESEL LOCOMOTIVES. Documents from the India Store Department, Government Building, Bromyard Avenue, London, W.3, quoting Tender No. SE-107.

January 8—Federation of Rhodesia and Nyasaland.—Federation Tender Board for 16 200-gal. two-wheel WATER TRAILERS. Tenders to the Secretary, Federal Tender Board, P.O. Box 8075, Causeway, Southern Rhodesia. (ESB/29663/59.)

January 15—Ireland.—Galway Corporation for two 36- to 40-b.h.p. DIESEL TRACTORS and two enclosed 5-ton REFUSE COLLECTOR TRAILERS. Particulars from Mr. P. O'Gradaigh, Baile Chleireach Sealadach, 22 Dominic Street, Galway.

January 15—Costa Rica.—Institute of Electricity for 840 steel TUNNEL RIBS, 60 tons of RAIL, RAIL SPIKES and 12 sets of POINTS. Photocopies of tender documents from Export Services Branch, Board of Trade, price 1s. (ESB/29124/59.)

January 15—Union of South Africa.—South African Railways for about 400 sets of coach lighting LEAD-ACID BATTERIES. Photocopies of tender documents from Export Services Branch, B.O.T., price 13s. (ESB/29089/59.)

January 21—New Zealand.—Posts and Telegraphs Department for one diesel FORK-LIFT TRUCK, 10,000-12,000 lb. capacity at 24-in. centres to 14 ft. or 16 ft., on pneumatic tyres. Tenders to the Director-General (Stores Division), General Post Office, Wellington. (ESB/29199/59.)

Export Opportunity—Italy.—S.R.L. Fast (Forniture Articolate Speciali Tecnici), Via Circonvallazione Nomentana 834, Rome, has informed the British Embassy at Rome that it would like to represent United Kingdom manufacturers of brake and clutch linings for the whole of Italy. (ESB/29436/59.)

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MOBILE SHOP

with choice of chrome bore petrol, or light diesel engine

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